Nakamichi

Service Manual

Nakamichi
MR-1

Discrete Head
Professional Cassette Deck

CONTENTS

1. GENERAL

1.1. Introduction

This Service Manual is prepared for U.S.A. and Canada versions. For Australia, Others (220V fixed) and 220V Class 2 versions, refer to the separate-volume supplement. Further, parts list of mounting diagrams and wiring diagram are included in the supplement. This Service Manual applies to the Models bearing serial Nos. A12802010 and greater.

1.2. Packing Materials and Owner's Manual

Part No.	Description	Q'ty
0F03847A	Carton Box	1
0F03859A	Packing	2
0F03670A	Polyethylene Sheet	1
0D04506A	Owner's Manual	1

2. TEST TAPES AND GAUGES

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

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) 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 their original places 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 head 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.

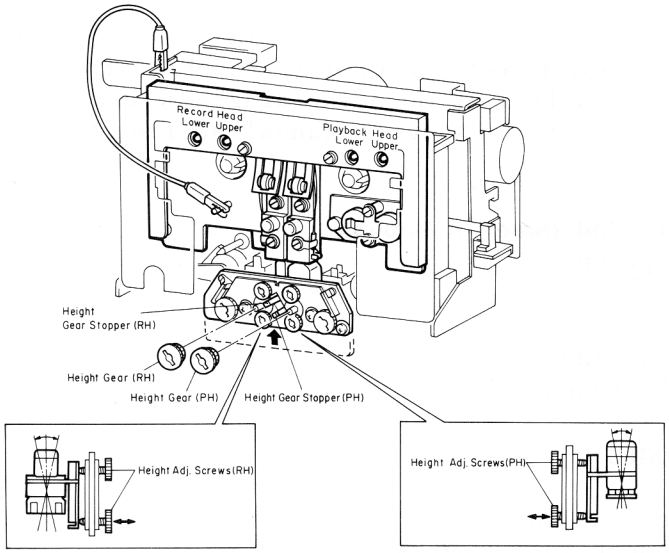


Fig. 3.1

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 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.
Then slowly release the Indicators and insure whether each of the Indicators is in contact with record and 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.

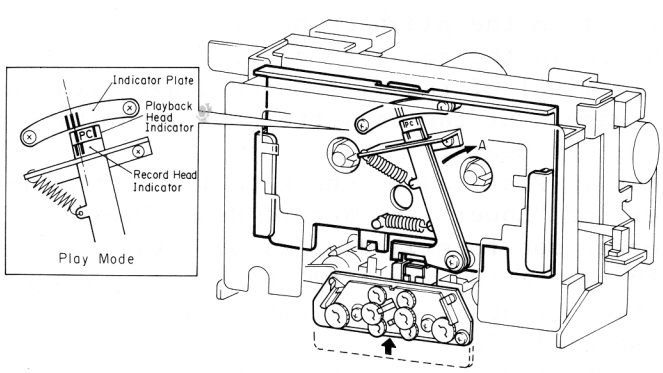


Fig. 3.2

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 erase head with erase head plate.
(d) After completion of 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 against 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) Set 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.

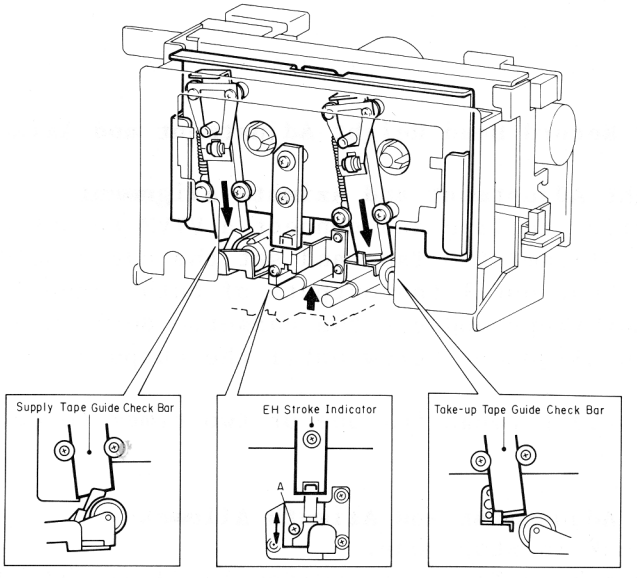


Fig. 3.3

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 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.

Adjustment 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 (6) 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 dirts, or overflow in the groove of the erase head surface.

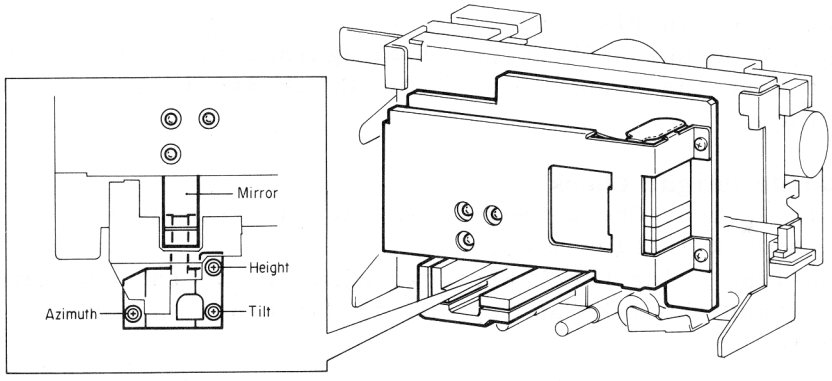


Fig. 3.4

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 B 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 Alinment

(a) Set the cassette deck in Stop mode.
(b) Set the Monitor switch to Tape, Eq. switch to 70 μs and Tape Selector switch to Metal.
(c) Load a reference ZX tape and connect a VTVM to Output Jacks (Unbalanced).
(d) Feed in 400 Hz (-10 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 (-30 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.

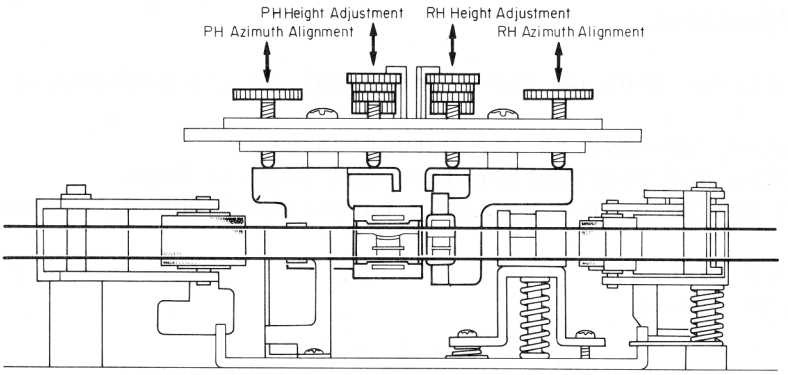


Fig. 3.5

3.6. Pressure Adjustment of Take-up Pressure Roller

Refer to Fig. 3.6.

(1) Set the cassette deck in Play mode.
(2) Measure the torque of the Take-up Pressure Roller and check whether the torque is in a range of 320 ±50 g-cm.
(3) If torque is out of the range, correct it by changing the installation point of the Pressure Roller Spring.

3.7. Tape Travelling Check

Load and playback a Tape Travelling Cassette and check the following:
Refer to Fig. 3.7.

(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.

3.8. Eject Damper Adjustment

Refer to Fig. 3.8. Load a cassette tape and, with opening the Cassette Case by pressing the Eject button and closing it by hand, adjust the speed of damper action by the Damper Adjusment Screw.

3.9. Reel Motor Speed Adjustment in Play Mode

(1) 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 meter TW-211 (made by Sony) and set the cassette deck in Play mode.
(3) Adjust VR601 on the Main P.C.B. Ass'y to obtain exactly 50 g-cm on the torque meter.

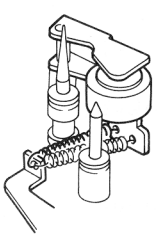


Fig. 3.6

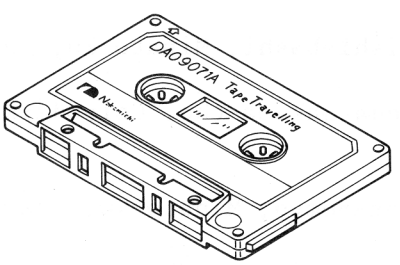


Fig. 3.7

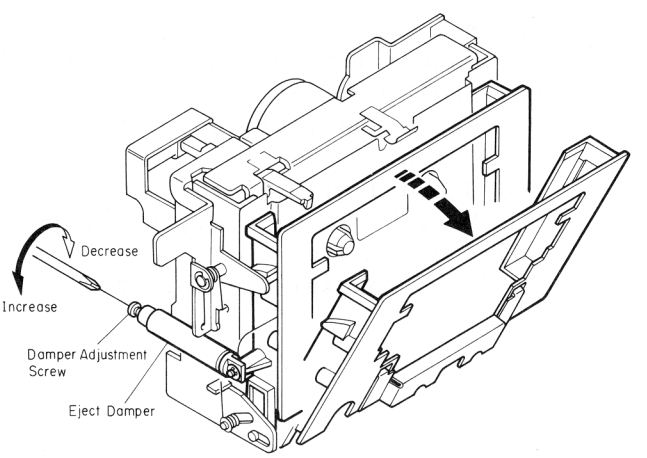


Fig. 3.8

3.10. Tape Speed Adjustment

Refer to Fig. 3.9.

(1) Set the Pitch Control Knob on the Front Panel to its mechanical center position.
(2) Connect a frequency counter to the Output Jacks.
(3) Load a 3 kHz Speed and Wow/Flutter Tape and play it back.
(4) Adjust VR101 on the Motor P.C.B. Ass'y to obtain 3,000 Hz on the frequency counter.
    CCW: Motor runs fast.
    CW: Motor runs slowly.

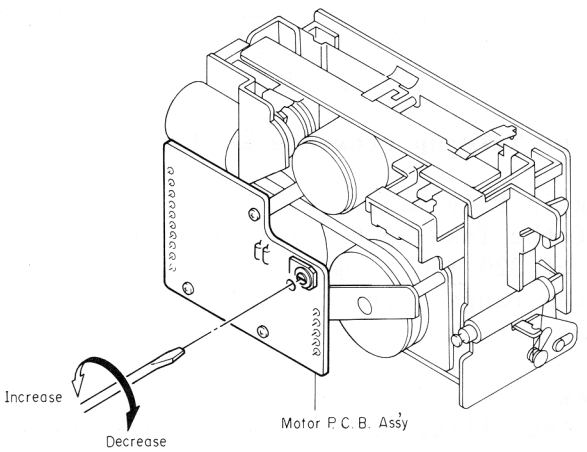


Fig. 3.9

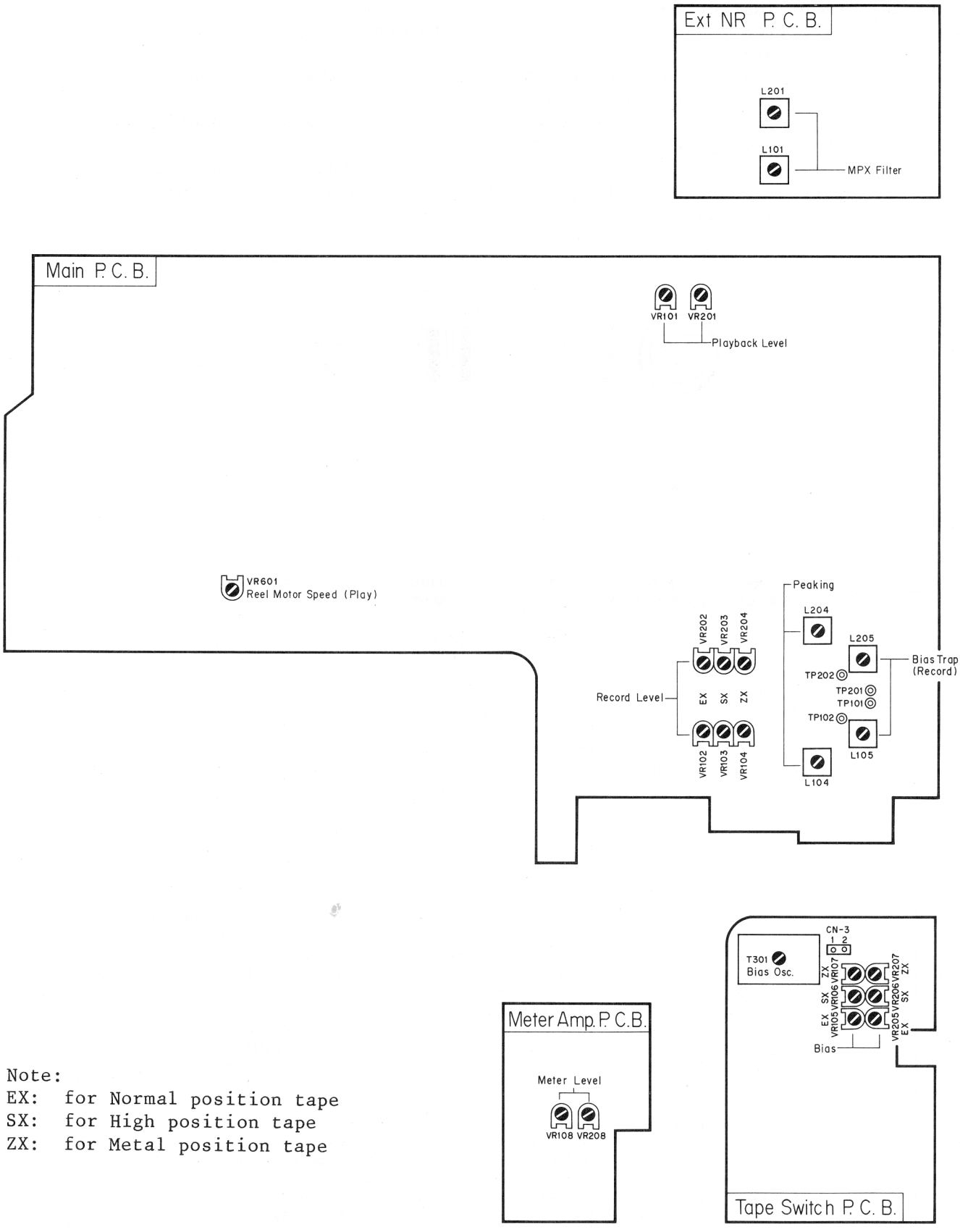
3.11. Lubrication

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

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

Note: We suggest that you use the above specified lubricant or equivalent type.
The company dealing in the above lubricant is as follows:
(a) Molykote Ⓡ Grease (X5-6020)
    Dowcorning Co., Ltd., 1-15-1 Nishishinbashi, Minato-ku, Tokyo, Japan
(b) FLOIL GB-TS-1
    Kanto Chemicals Co., Ltd., 2-7 Kanda Sakuma-cho, Chiyoda-ku, Tokyo, Japan
(c) Diamond Oil (EP-56)
    Mitsubishi Oil Co., Ltd., 1-2-4 Toranomon, Minato-ku, Tokyo, Japan
(d) Anderol 456
    Toyo Kokusai Oil Co., Ltd., 3-3-5 Hatchobori, Chuo-ku, Tokyo, Japan

4. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT



Note:
EX: for Normal position tape
SX: for High position tape
ZX: for Metal position tape

Fig. 4

5. ELECTRICAL ADJUSTMENTS

5.1. Adjustment Instructions

Notes: 1. Electrical adjustment should be performed after mechanical adjustment is completed.
2. Before adjustment, set the Pitch Control on the Front Panel to its mechanical center position.
3. Adjustment can be made by way of either the XLR Line Input/Output Jacks (Balanced) or the 1/4-Inch Line Input/Output Jacks (Unbalanced). However, when the former Jacks are used, a balanced type transformer must be connected between the Jacks and measurement instruments to be used as shown in Fig. 5.1.

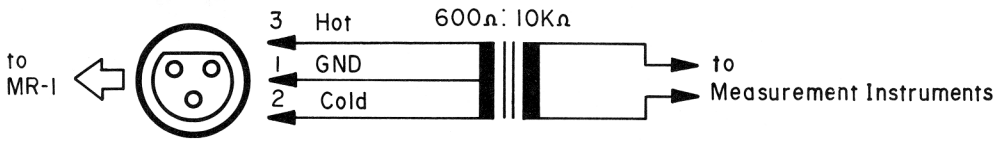


Fig. 5.1

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
1	Tape Speed Adjustment	3 kHz Speed and Wow/ Flutter Tape	Frequency Counter to Output Jacks	Playback Eq. - 70 μs	Motor P.C.B. VR101	1. Set the Pitch Control to its mechanical center position. 2. Adjust VR101 to obtain 3 kHz ±0.5% on the frequency counter.
2	Meter Level Calibration	400 Hz to Input Jacks	VTVM to Output Jacks (Unbalanced)	Monitor - Source	Meter Amp. P.C.B. VR108 VR208	1. Set the Output Level control to max. 2. Feed in 400 Hz and adjust the Input Level controls to obtain -12 dBV on the VTVM. 3. Adjust VR108 (VR208) so that the 0 dB segment of the level meter starts illuminating. 4. Adjust the Input Level controls to obtain -8 dBV on the VTVM and check to insure that the upper segment of the 0 dB segment starts illuminating.
3	MPX Filter Adjustment	19 kHz ±100 Hz to Input Jacks	VTVM to Output Jacks (Unbalanced)	Monitor - Source NR Selector - Ext. MPX - ON	Ext. NR P.C.B. L101 L201	1. Set the Output Level control to max. 2. Adjust the Input Level controls to obtain -10 dBV (316 mV) on the VTVM. 3. Set the MPX Filter switch to ON and adjust L101 (L201) to obtain minimum reading on the VTVM (the minimum reading will be less than -40 dBV (10 mV).
4	Playback Head Track Alignment	1 kHz Track Alignment B Tape	VTVM to Output Jacks	Playback Monitor - Tape NR Selector - Ext. MPX - OFF	PH Height Gear	Adjust the PH Height Gear to obtain minimum readings for both channels on the VTVM. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 3.5.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
5	Playback Head Azimuth Alignment	15 kHz Azimuth Tape	VTVM to Output Jacks	Playback Monitor - Tape NR Selector - Ext. MPX - OFF	Playback Head Azimuth Align-ment Screw	Adjust the Playback Head Azimuth Align-ment Screw to obtain maximum readings for both channels on the VTVM. Refer to item 3.5. Note: Repeat steps 4 and 5 one or two times to obtain optimum perfor-mance.
6	Playback Level Calibration	400 Hz Level Tape	VTVM to Output Jacks of "To Encoder"	Same as above	Main P.C.B. VR101 VR201	Adjust VR101 (VR201) to obtain 350 mV on the VTVM.
7	Playback Frequency Response Adjustment	400 Hz Level Tape 10 kHz PB Frequency Response Tape 15 kHz PB Frequency Response Tape 20 kHz PB Frequency Response Tape	VTVM to Output Jacks (Un-balanced)	Playback Monitor - Tape Tape Selector - High Eq. - 70 μs NR Selector - Ext. MPX - OFF	Main P.C.B. R109 R209 R110 R210	1. Load a 400 Hz level tape and play it back. Adjust the Output Level control to a certain level (-10 dB for example). 2. Load 10 kHz, 15 kHz and 20 kHz PB frequency response tapes and align the playback head azimuth to obtain maximum levels on the VTVM with each tape. Short R109 (R209) and/or R110 (R210) to obtain the following levels against the level for the 400 Hz level tape. 10 kHz: -20 dB -3 to +1 dB 15 kHz: -20 dB -5 to 0 dB 20 kHz: -20 dB -7 to -1 dB Refer to "Playback Frequency Response Adjustment in item 5.2. 3. Conduct step 5 "Playback Head Azimuth Alignment".
8	Bias Oscillation Frequency and Erase Current Adjustment		VTVM across an addi-tional 0.1 ohm resistor and Frequency Counter to CN3-1 on Tape Switch P.C.B.	Record, Pause Monitor - Source Tape Selector - Metal Eq. - 70 μs NR Selector - Ext. MPX - OFF	Tape Switch P.C.B. T301 R301 R302	1. Connect an additional resistor in series to the Erase Head and con-nect a VTVM across the resistor. 2. Adjust T301 to obtain 105 kHz on the frequency counter. 3. Check the erase current by the VTVM. Erase current will be in a range of 310 mA to 400 mA (typically approx. 350 mA). If erase current is not sufficient, increase it by shorting either R301 or R302. 4. After completion of the erase current adjustment, re-check the bias oscillation frequency. 5. Remove the additional 0.1 ohm resistor.
9	Record Amplifier Equalizer Adjustment	400 Hz and 23 kHz to Input Jacks	VTVM to TP101,TP201 on Main P.C.B. and Output Jacks (Un-balanced)	Same as above	Main P.C.B. L104 L204	1. Remove the bias-cut jumper on the dip side of the Tape Switch P.C.B. Ass'y. 2. Feed in 400 Hz to the Input Jacks and adjust the Input Level controls to obtain -10 dBV (316 mV) on the VTVM at the Output Jacks (Unbalanced). 3. Note the readings on the VTVM at TP101 (TP201). 4. Feed in 23 kHz and adjust the Input Level controls to obtain -26 dBV on the VTVM at the output Jacks (Unbalanced). 5. Adjust L104 (L204) to obtain the same readings as in 3 at TP101 (TP201). 6. Mount the bias-cut jumper.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
10	Bias Trap Adjustment (Record Amp.)	Remove input signals	VTVM to TP102, TP202 on Main P.C.B.	Record, Pause Monitor - Source Tape Selector - Metal Eq. - 70 μs NR Selector - Ext. MPX - OFF	Main P.C.B. L105 L205	Adjust L105 (L205) to obtain minimum reading on the VTVM.
11	Record Head Height Adjustment	400 Hz to Input Jacks	VTVM to Output Jacks	Record, Play-back Monitor - Tape Tape Selector - Metal Eq. - 70 μs NR Selector - Ext. MPX - OFF	RH Height Gear	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.
12	Record Head Azimuth Alignment	15 kHz to Input Jacks	VTVM to Output Jacks	Same as above	Record Head Azimuth Align-ment Screw	Adjust the Record Head Azimuth Alignment Screw to obtain maximum readings for both channels on the VTVM. Refer to 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 (-10 dBV) and 15 kHz (-30 dBV) to Input Jacks	VTVM and Distortion Meter to Output Jacks (Unbalanced)	Record, Play-back Monitor - Source/Tape Tape Selector - Metal/High/Normal Eq. - 70 μs (Metal/High) 120 μs (Normal) NR Selector - Ext. MPX - OFF	Main P.C.B. (Level) Metal: VR104 VR204 High: VR103 VR203 Normal: VR102 VR202 Tape Switch P.C.B. (Bias) Metal VR107 VR207 High: VR106 VR206 Normal: VR105 VR205	Adjustment should be made in the order of Metal, High and Normal. 1. Set the Monitor switch to Source. 2. Feed in 400 Hz and adjust the Input Level controls to obtain -10 dBV (316 mV) on the VTVM. 3. Set the Monitor switch to Tape. 4. Load a reference ZX tape, reference SX tape and reference EXII tape, and set the MR-1 in Record/Play mode. 5. Adjust Record Level Cal. VR104 (VR204) for ZX tape, VR103 (VR203) for SX tape and VR102 (VR202) for EXII tape to their center positions. 6. Feed in 15 kHz (-30 dBV: 31.6 mV) and adjust Bias VR107, (VR207) for ZX tape, VR106 (VR206) for SX tape and VR105 (VR205) for EXII tape to obtain the same readings as source monitor levels on the VTVM. 7. Feed in 400 Hz (-10 dBV: 316 mV) and adjust Record Level Cal. VR104 (VR204), VR103 (VR203) and VR102 (VR202) to obtain -10 dBV (316 mV) on the VTVM. 8. Repeat above 6 and 7 two or three times to obtain optimum performance. 9. Check to insure whether the total harmonic distortion is less than 0.9% for ZX tape and 1.0% for SX and EXII tapes. 10. If above is not sufficient, repeat 2 to 9 till satisfactory results are obtained.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
14	Overall Frequency Response Adjustment	400 Hz (-10 dBV) and 20 Hz to 20 kHz (-30 dBV) to Input Jacks	VTVM to Output Jacks (Unbalanced)	Record, Playback Monitor - Source/Tape Tape Selector - Metal/High/Normal Eq. - 70 μs (Metal/High) 120 μs (Normal) NR Selector - Ext. MPX - OFF	Main P.C.B. L104 L204	1. Set the Monitor switch to Source. 2. Feed in 400 Hz and adjust the Input Level controls to obtain -10 dBV (316 mV) on the VTVM. 3. Switch the Generator output level to -30 dBV (31.6 mV). 4. Set the Monitor switch to Tape. 5. Load a reference ZX tape, reference SX tape and EXII tape, and record and play them back. 6. Feed in 20 Hz to 20 kHz (-30 dBV: 31.6 mV) and check to insure whether the output levels are within -30 dBV (31.6 mV) ±3 dB. 7. If above is not sufficient, adjust L104 (L204) to obtain approx. -30 dBV (31.6 mV) on the VTVM at 20 kHz. 8. Conduct step 13 "Record Level Calibration and Recording Bias Current Adjustment". 9. If above is not sufficient, precise re-adjustment of step 7 "Playback Frequency Response", replacement of Playback Head or Record Head, or check on item 3.7 "Tape Travelling Check" will be required.

5.2. Playback Frequency Response Adjustment

Figs. 5.2 and 5.3 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 shortcircuit of R109 (R209) and/or R110 (R210) on the Main P.C.B. Ass'y.

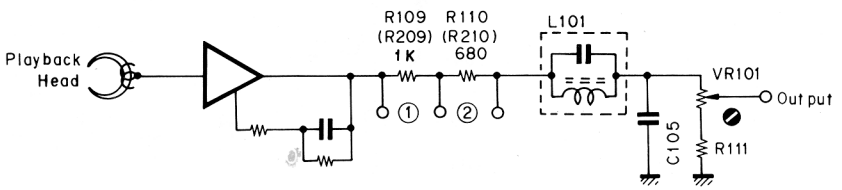


Fig. 5.2

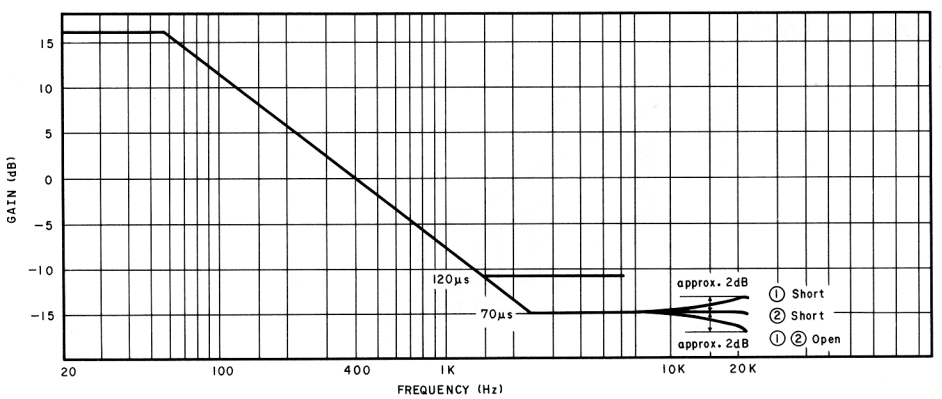


Fig. 5.3

6. MECHANISM ASS'Y AND PARTS LIST

6.1. Synthesis

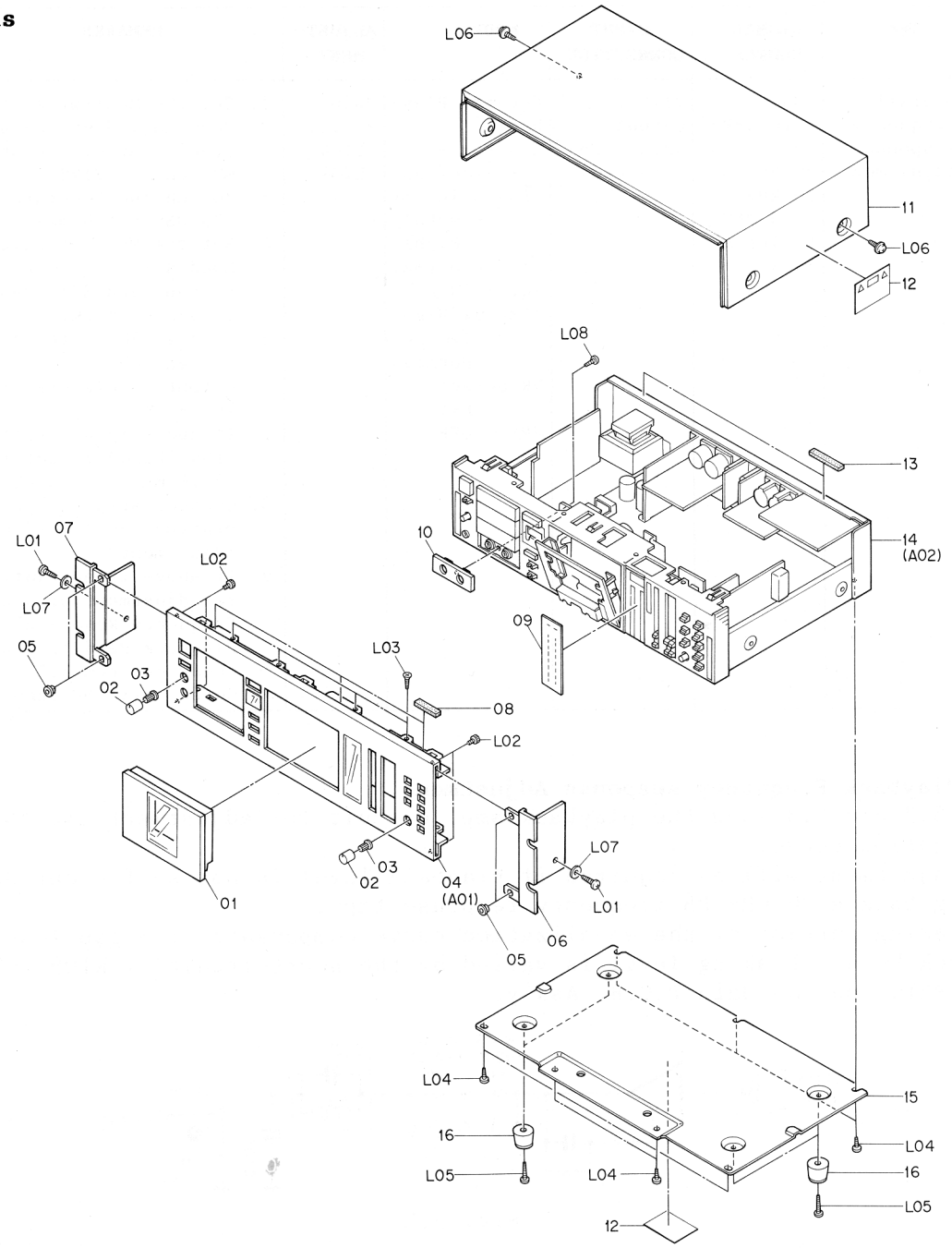


Fig. 6.1

6.2. Front Panel Ass'y (A01)

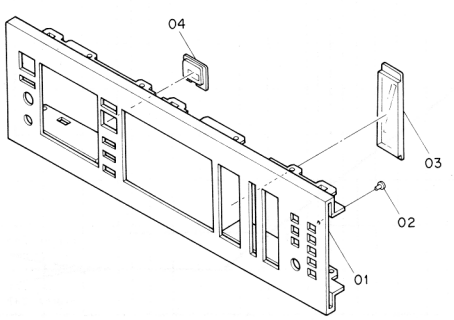


Fig. 6.2

Ref. No.	Part No.	Description	Q'ty
		Synthesis	
01	HA04787A	Lid Ass'y	1
02	0H04596A	Volume Knob	2
03	0H03737A	Volume Knob Base	2
04	HA04728A	Front Panel Ass'y	1
05	0J04982A	Side Stopper	4
06	0H04605A	Side Panel R	1
07	0H04606A	Side Panel L	1
08	0J04628A	Top Cover Cushion (Front)	3
09	0H04592A	Meter Scale	1
10	0H04604B	Input Jack Cover	1
11	0H04156B	Top Cover	1
12	0M04377B	Caution Label	1
13	0J04629A	Top Cover Cushion (Back)	2
14	-	Synthesis Mechanism Ass'y	1
15	0J04762A	Bottom Cover	1
16	0J04980A	Leg	4
-	0J04581A	Counter Cushion	3
-	0J05014A	Line Mold Cushion	2
L01	0E00944A	BT4x15 Philips Binding (Black Chromate)	2
L02	0E00996A	M3x6 Hex. Socket Head (Black Chromate)	4
L03	0E03054A	BT3x8 Philips Countersunk	4
L04	0E00868A	BT3x8 Philips Binding	7
L05	0E03136A	BT3x16 Philips Binding (Black Chromate)	4
L06	0E03032A	BT4x8 Philips Pan Washer-faced (Black Chromate)	2
L07	0E00914A	Washer 4x8x0.5	2
L08	0E00854A	BT2.6x4 Philips Binding	1

Ref. No.	Part No.	Description	Q'ty
A01	**HA04728A**	**Front Panel Ass'y**	**1**
01	0H04523A	Front Panel	1
02	0H04240A	LED Lens	1
03	0H04251C	Meter Lens	1
04	0H04607A	Counter Cover	1

6.3. Synthesis Mechanism Ass'y (A02)

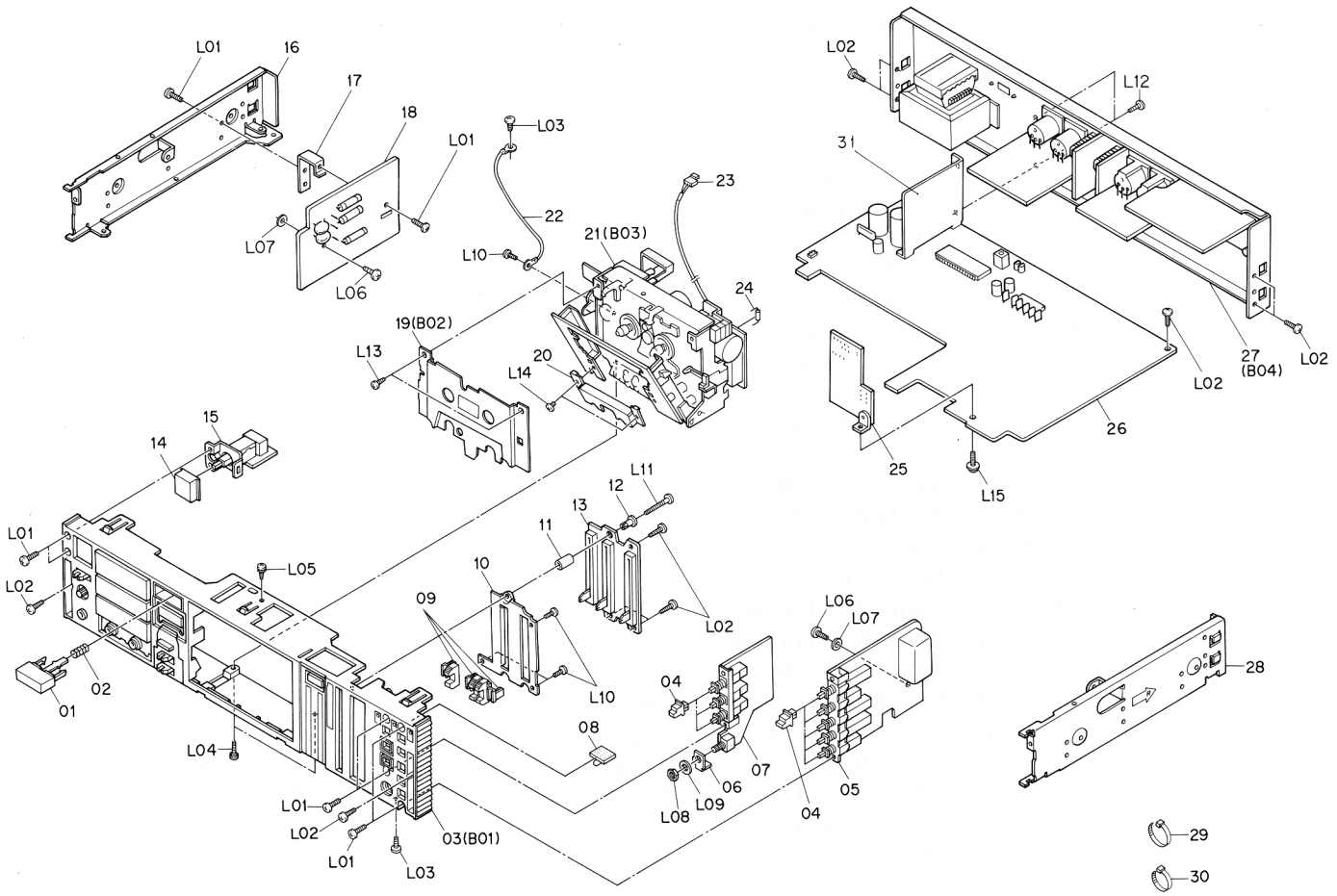


Fig. 6.3

6.4. Front Chassis Ass'y (B01)

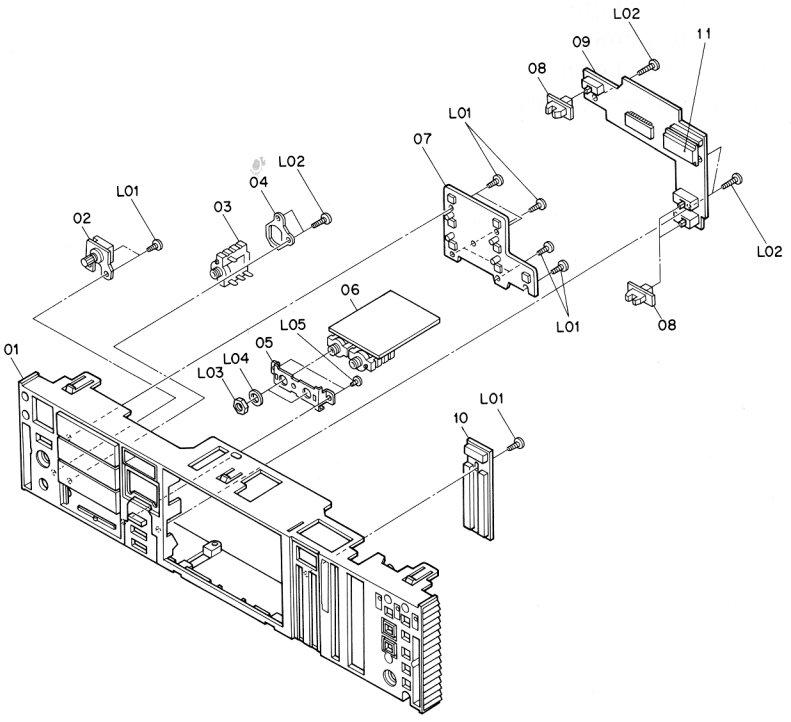


Fig. 6.4

Ref. No.	Part No.	Description	Q'ty
A02	-	**Synthesis Mechanism Ass'y**	**1**
01	HA04786A	Eject Button Ass'y	1
02	0J04765A	Spring	1
03	HA04727A	Front Chassis Ass'y	1
04	0H04248A	Push Switch Button	8
05	BA05530A	Tape Switch P.C.B. Ass'y	1
06	0J04838A	Volume Holder	1
07	BA05529B	Dolby NR Switch P.C.B. Ass'y	1
08	BA05649A	Tape LED P.C.B. Ass'y	1
09	0H04601A	Slide Volume Knob	3
10	0H04598A	Slide Volume Plate	1
11	0J04703A	P.C.B. Spacer A	1
12	0J04704A	P.C.B. Spacer B	1
13	BA05544A	Volume P.C.B. Ass'y	1
14	0H04602A	Power Switch Knob	1
15	BA05540A	Power Switch P.C.B. Ass'y	1
16	0J04841B	Side Chassis (L)	1
17	0J04839A	P.C.B. Holder	1
18	BA05546B	Fuse P.C.B. Ass'y	1
19	HA04793A	Cover Plate Ass'y	1
20	0H04415A	Cover Plate	1
21	CA08650A	Mechanism Ass'y	1
22	BA05400A	Earth Wire Ass'y	1
23	0B82311A	3P-H Connector	1
24	0B09685A	Carbon Resistor 2.2 k-ohm 1/6W J	1
25	BA05525A	Meter Amp. P.C.B. Ass'y	1
26	BA05517A	Main P.C.B. Ass'y	1
27	HA04722A	Rear Panel Ass'y (U.S.A.)	1
	HA04730A	Rear Panel Ass'y (Canada)	1
28	0J04773D	Side Chassis (R)	1
29	0B08515A	Insu-Lock BK-1	8
30	0B90012A	Insu-Lock 140 mm	5
31	BA05548A	Heat Sink Ass'y (consists of the followings)	1
	(0B06452A)	(Transistor 2SD1406 (Y))	(1)
	(0B06451A)	(Transistor 2SB1015 (Y))	(1)
	(0B90067A)	(Heat Sink)	(1)
	(0E00507A)	(Nut Hex. M3)	(2)
	(0E00510A)	(M3x8 Philips Pan (2A))	(2)
-	0J04890A	P.C.B. Holder	1
-	0J05023A	P.C.B. Shield Plate	1
-	0B08525A	Fuse 2A	2
-	0B08374A	Fuse 1A	1
L01	0E00766A	M3x8 Philips Binding	8
L02	0E00868A	BT3x8 Philips Binding	10
L03	0E00857A	BT3x6 Philips Binding	2
L04	0E03074A	BT2.6x8 Philips Binding with Toothed-Lock Washer	2
L05	0E03212A	BT2.6x6 Philips Binding with Toothed-Lock Washer	1
L06	0E03217A	BT4x8 Philips Binding	2
L07	0E03238A	Fiber Washer 4x10x1	2
L08	-	Nut	(1)
L09	-	Washer	(1)
L10	0E00859A	BT2.6x6 Philips Binding	4
L11	0E00835A	BT3x25 Philips Pan	1
L12	0E00921A	BT3x8 Philips Binding (Black Chromate)	2
L13	0E00824A	BT2.6x6 Philips Pan (Black Chromate)	2
L14	0E03202A	M2.6x3 Philips Binding (Black Chromate)	2
L15	0E00607A	M3x8 Philips Binding (3A)	1

Ref. No.	Part No.	Description	Q'ty
B01	**HA04727A**	**Front Chassis**	**1**
01	HA04720A	Front Chassis Sub Ass'y	1
02	BA05547A	Headphone Volume P.C.B. Ass'y	1
03	0B08511A	Headphone Jack	1
04	0J04611A	Headphone Plate	1
05	0J04983B	Input Jack Holder	1
06	BA05646A	Input Bal. Amp. B P.C.B. Ass'y	1
07	BA05542A	Control Switch P.C.B. Ass'y	1
08	0H04603A	Slide Switch Knob	3
09	BA05543A	Counter P.C.B. Ass'y	1
10	BA05545A	Level Indicator Ass'y	1
11	0B12098A	Counter LED	1
-	0J05106A	Counter Himelon	1
L01	0E00857A	BT3x6 Philips Binding	9
L02	0E00868A	BT3x8 Philips Binding	5
L03	-	Nut	(1)
L04	-	Washer	(1)
L05	0E00869A	BT2.6x4 Philips Binding	2

6.5. Cover Plate Ass'y (B02)

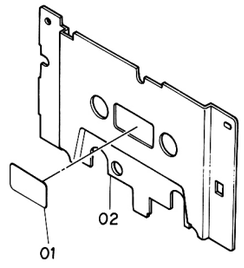


Fig. 6.5

Ref. No.	Part No.	Description	Q'ty
B02	**HA04793A**	**Cover Plate Ass'y**	**1**
01	0M04196A	Cassette Label (Silver)	1
02	0H04437B	Cover Plate	1

6.6. Mechanism Ass'y (B03)

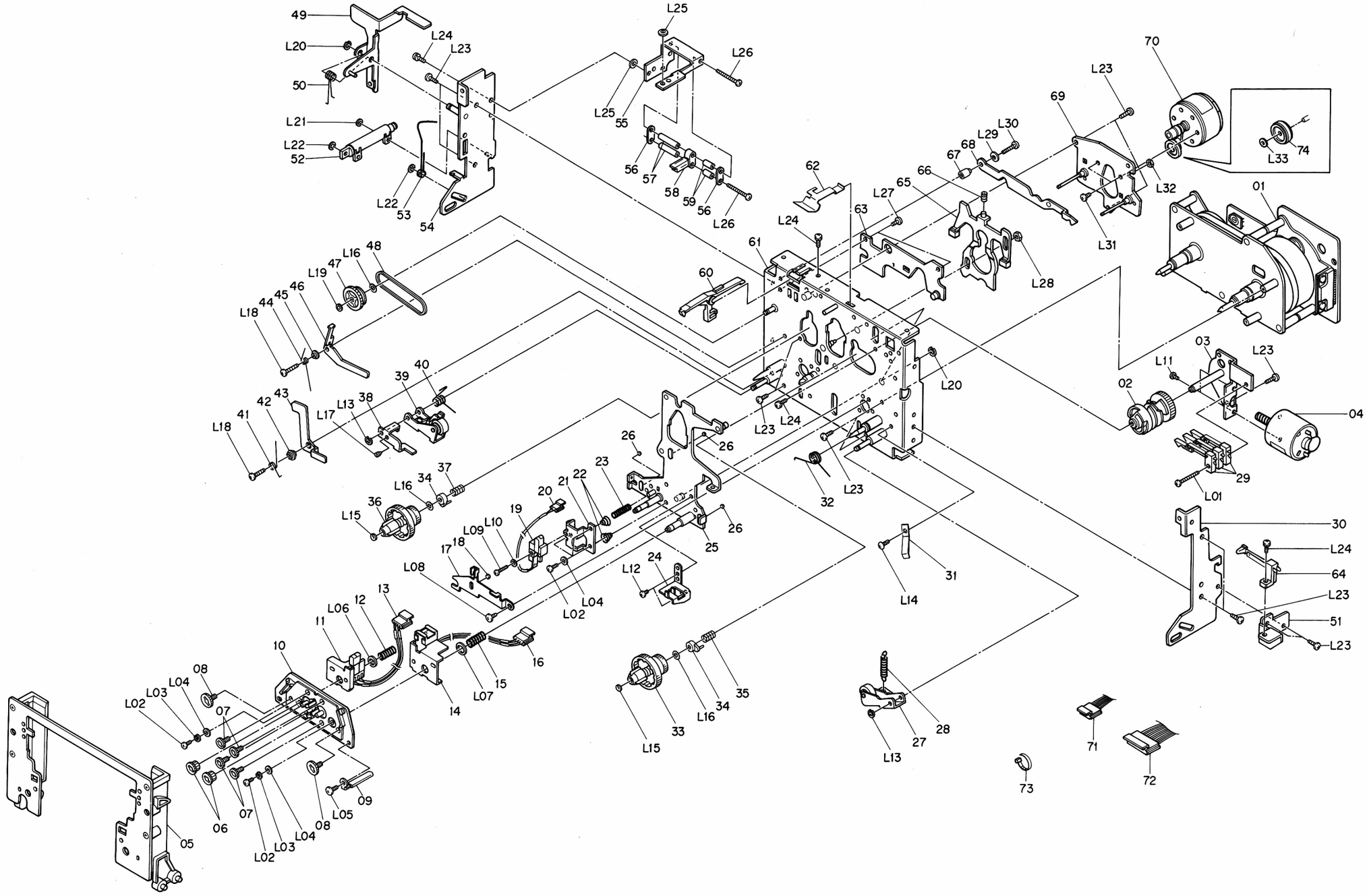


Fig. 6.6

Ref. No.	Part No.	Description	Q'ty
B03	**CA08650A**	**Mechanism Ass'y**	**1**
01	CA80206A	D.D. Motor Ass'y	1
02	0C80026A	Cam	1
03	0C80028A	Control Motor Holder	1
04	CA80007A	Control Motor Ass'y	1
05	CA80200A	Cassette Case Ass'y	1
06	0C08762A	Head Height Adjustment Gear	2
07	0C08761A	Head Height Adjustment Screw	4
08	0C08763A	Azimuth Alignment Screw	2
09	0C80605A	Wire Clamper	1
10	CA08637A	Head Mount Base Sub Ass'y	1
11	CA08659B	R-3L Record Head Ass'y	1
12	0C08776A	Head Plate Spring (L)	1
13	0C80606A	4P-H Connector	1
14	CA08658B	P2H-3L Playback Head Ass'y	1
15	0C08775A	Head Plate Spring (R)	1
16	0C80607A	4P-H Connector	1
17	0C80003A	Head Base Hold Plate	1
18	0C80004A	Steel Ball 3mm	1
19	GA02201A	E-4F Erase Head	1
20	0C80608A	2P-H Connector	1
21	0C08768A	Erase Head Hold Plate	1
22	0C08889A	Erase Head Hold Plate Tapering Spring	2
23	0C08886A	Erase Head Hold Plate Spring	1
24	0C08771A	Tape Guide Plate	1
25	CA08638A	Head Base Sub Ass'y	1
26	0C80007A	Steel Ball 2mm	3
27	CA80005A	Take-up Pressure Roller Arm Ass'y	1
28	0C80609A	Take-up Pressure Roller Arm Spring	1
29	0C80027A	Mode Switch	1
30	0C80010C	Cassette Case Holder R	1
31	0C80610A	Cassette Case Spring	1
32	0C80611A	Head Base Spring	1
33	CA80201A	Take-up Reel Hub Ass'y	1
34	0C80612A	Spring Holder	2
35	0C80613A	Take-up Reel Hub Spring	1
36	CA80202A	Supply Reel Hub Ass'y	1
37	0C80614A	Supply Reel Hub Spring	1
38	0C80615A	Pressure Roller Plate	1
39	CA80203A	Supply Pressure Roller Arm Ass'y	1
40	0C80616A	Supply Pressure Roller Arm Spring	1
41	0C80013A	Lock Lever Spring	1
42	0C80014A	Lock Lever Collar	1
43	0C80015A	Lock Lever	1
44	0C80617A	Back Tension Arm Spring	1
45	0C80618A	Back Tension Arm Collar	1
46	0C80619A	Back Tension Arm	1
47	0C80620A	Back Tension Pulley	1
48	0C80621A	Back Tension Belt	1
49	0C80021A	Eject Lever	1
50	0C80020A	Eject Lever Spring	1
51	0C80011A	Eject Sensor Holder	1
52	CA80006A	Pneumatic Damper Ass'y	1
53	0C80019A	Eject Spring	1
54	0C80018A	Cassette Case Holder L	1
55	0C80622A	Switch Hold Plate	1
56	0C80623A	Switch Plate	2
57	0C80624A	Switch Collar A	2
58	0C80626A	Leaf Switch	1
59	0C80625A	Switch Collar B	2
60	0C80017A	Record Protect Lever	1
61	0C80627A	Mechanism Chassis	1
62	0C80022A	Cassette Hold Spring	1
63	CA80011A	Shut-off P.C.B. Ass'y	1
64	0C80012A	Eject Sensor	1
65	CA80204A	Brake Ass'y	1
66	0C80628A	Brake Spring B	1
67	0C80630A	Brake Arm Collar	1
68	0C80629A	Brake Arm	1
69	0C80030A	Reel Motor Holder	1
70	CA80205A	Reel Motor Ass'y	1
71	0C80631A	5P-H Connector	1
72	0C80632A	9P-H Connector	1
73	0C80037A	Insu-Lock	3
74	0C80635B	Ider Pulley	1
-	0C80634A	Capstan Belt	1
L01	0E03044A	FT2.5x20 Philips Pan	1
L02	0E00976A	M2x5 Philips Binding	5
L03	0E00025A	Spring Washer 2mm	2
L04	0E00117A	Washer 2x4.3x0.4	5
L05	0E00866A	M2.6x4 Philips Binding	1
L06	0C08774A	Plate Washer L	1
L07	0C08773A	Plate Washer R	1
L08	0E03228A	FT3x4 Philips Pan	1
L09	0E03232A	M1.7x7 Philips Pan	1
L10	0E03222A	Washer 1.8x3.8x0.3	1
L11	0E03234A	M2x3 Philips Pan (Chromate)	2
L12	0E00691A	M2x3 Philips Pan (Nickel)	2
L13	0E00222A	E-Ring 2mm	2
L14	0E03035A	M2x3.2 Philips Truss	1
L15	0E03049A	Washer 1.8x3.2x0.5	2
L16	0E03226A	Washer 2.1x4.5x0.1	3
L17	0E00224A	M2x3 Cup Point	1
L18	0E03043A	FT2.5x10 Philips Pan	2
L19	0E03225A	Washer 1.8x3.8x0.5	1
L20	0E00181A	E-Ring 3mm	1
L21	0E03235A	Mylar Washer 2x5x0.25	1
L22	0E03052A	CS Stopper Ring 2.4mm	2
L23	0E03229A	FT2.5x6 Philips Pan	13
L24	0E03236A	M2x5 Philips Pan (2A)	4
L25	0E03227A	Washer 2.7x5.0.5	2
L26	0E03231A	M2x30 Philips Pan	2
L27	0E03041A	FT2.5x4 Philips Pan	2
L28	0E03237A	Nut Hex. M2.6	1
L29	0E03233A	Washer 2.6x8x1	1
L30	0E03230A	ST2.6x12 Philips Pan	1
L31	0E03045A	M2.6x3 Philips Binding	2
L32	0E00694A	Nut Hex. M2	1
L33	0E03245A	Mylar Washer 1.3x3.3x0.3	1

6.7. Rear Panel Ass'y (B04)

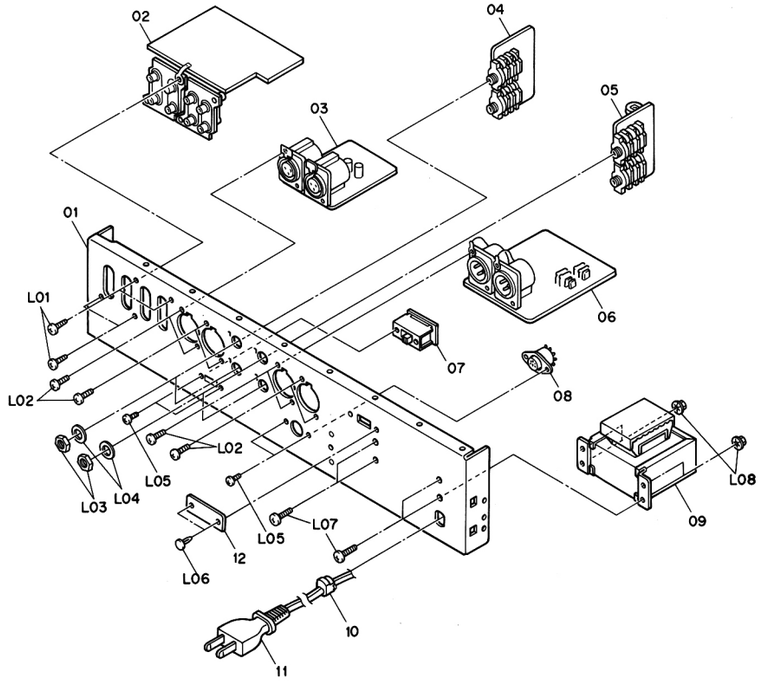


Fig. 6.7

Ref. No.	Part No.	Description	Q'ty
B04	**HA04722A**	**Rear Panel Ass'y (U.S.A.)**	**1**
	HA04730A	**Rear Panel Ass'y (Canada)**	**1**
01	0H04520B	Rear Panel	1
02	BA05645A	Ext. NR P.C.B. Ass'y	1
03	BA05644A	Input Bal. Amp. A P.C.B. Ass'y	1
04	BA05647A	Unbal. Input P.C.B. Ass'y	1
05	BA05648A	Unbal. Output P.C.B. Ass'y	1
06	BA05643A	Output Bal. Amp. P.C.B. Ass'y	1
07	BA05650A	MPX Filter Switch P.C.B. Ass'y	1
08	BA05734A	8P DIN Socket Ass'y (consisting of the followings)	1
	(0B08584A)	(8P DIN Socket)	(1)
	(0B82402A)	(SCN-S Connector 8P 150mm)	(1)
09	0B50037B	Power Transformer 120V	1
10	0B08037U	Cord Bushing C 4P-4 (U.S.A.)	1
	0B08351A	Cord Bushing 4K-4 (Canada)	1
11	0B08533A	Power Cord (U.S.A.)	1
	0B08504A	Power Cord (Canada)	1
12	0J04601B	Switch Cover	1
L01	0E00921A	BT3x8 Philips Binding (Black Chromate)	4
L02	0E00818A	M3x8 Philips Binding (Black Chromate)	8
L03	-	Nut	2
L04	-	Washer	2
L05	0E00824A	M2.6x6 Philips Pan (Black Chromate)	4
L06	0B08583A	Plastic Rivet	2
L07	0E03058A	M4x8 Philips Binding (Black Chromate)	2
L08	0E00928A	Nut Hex. M4 Washer-faced	4

7. MOUNTING DIAGRAMS AND PARTS LIST FOR ICS AND SEMICONDUCTORS

Note: 1. Mounting diagram shows a dip side view of the printed circuit board.
2. Diode is 1SS176, 1SS53, or 1S1555 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, ZD - Zener Diode

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

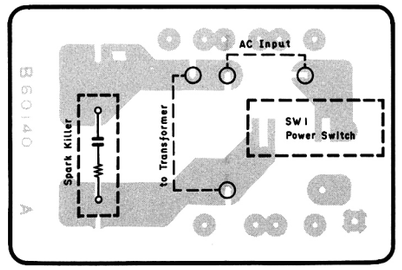


Fig. 7.1

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

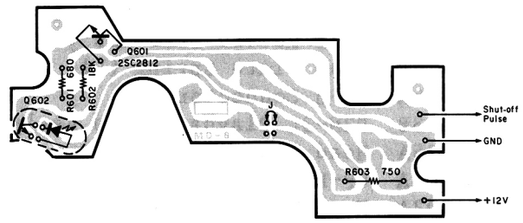


Fig. 7.2

7.3. Tape LED P.C.B. Ass'y

Fig. 7.3

7.4. MPX Filter P.C.B. Ass'y

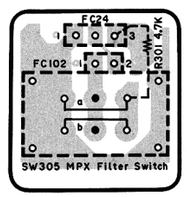


Fig. 7.4

7.5. Headphone Volume P.C.B. Ass'y

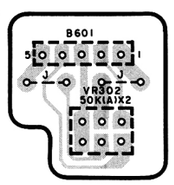


Fig. 7.5

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

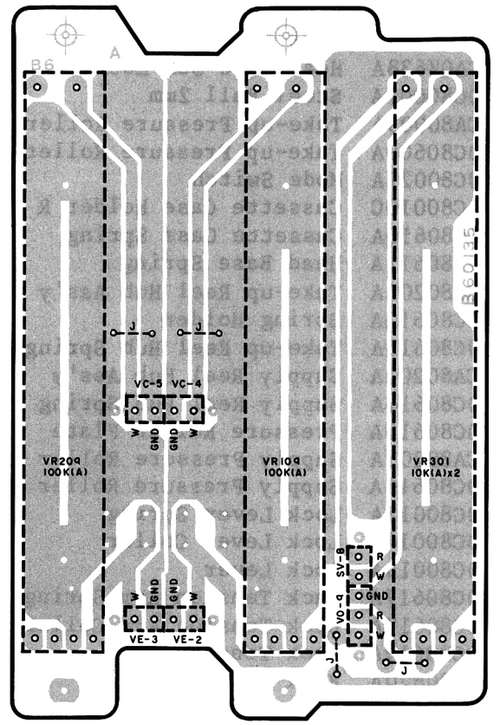


Fig. 7.6

7.7. Input Bal. Amp. A P.C.B. Ass'y

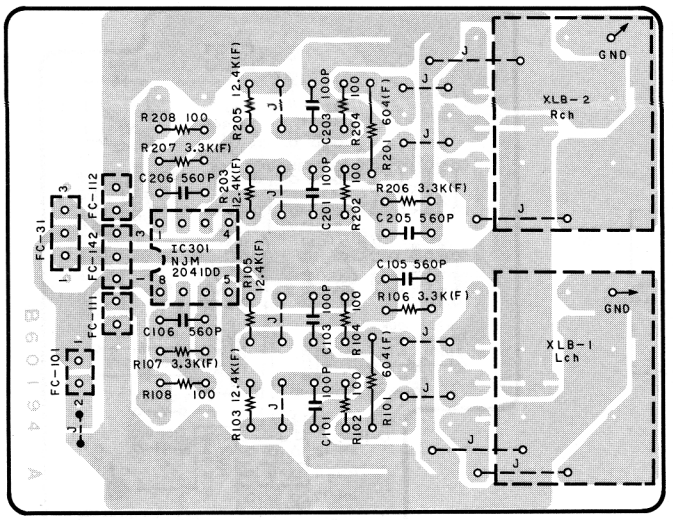


Fig. 7.7

7.8. Input Bal. Amp. B P.C.B. Ass'y

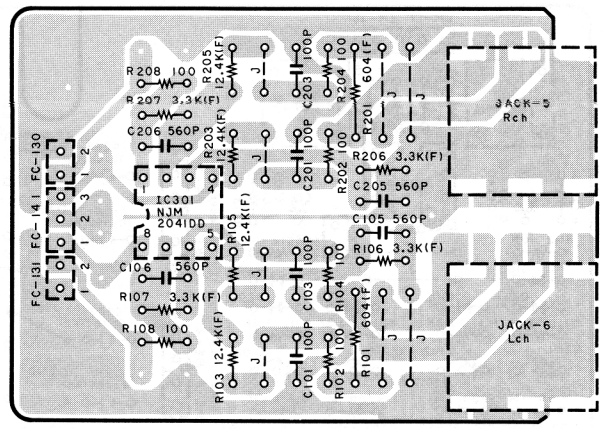


Fig. 7.8

7.9. Unbal. Input P.C.B. Ass'y

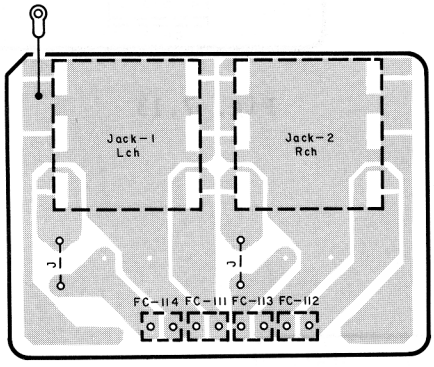


Fig. 7.9

7.10. Unbal. Output P.C.B. Ass'y

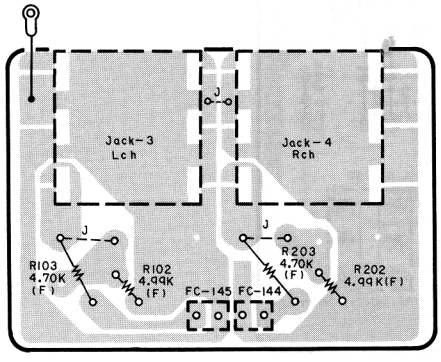


Fig. 7.10

7.11. Output Bal. Amp. P.C.B. Ass'y

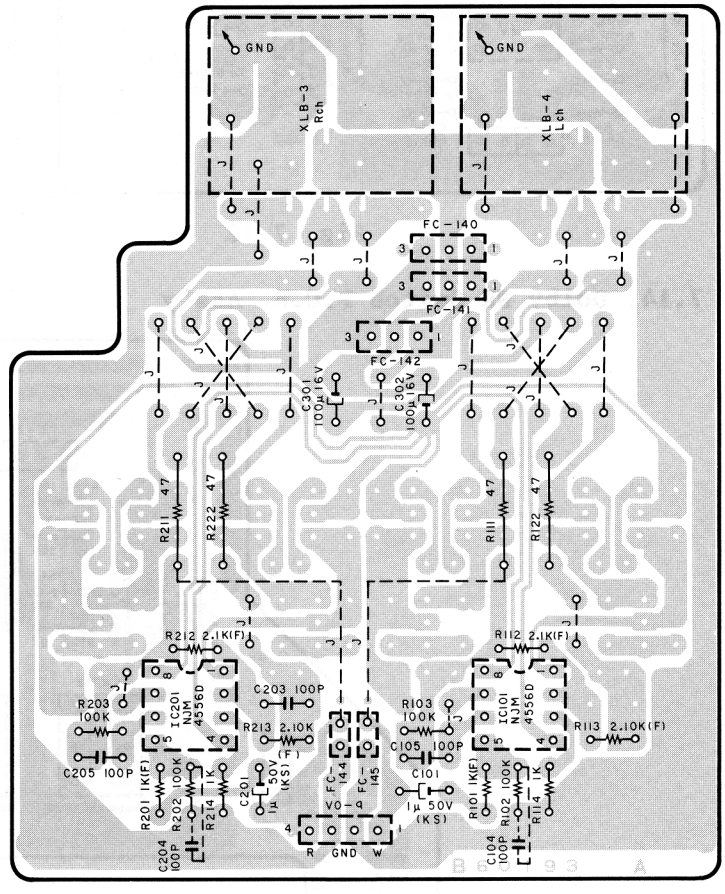


Fig. 7.11

7.12. Ext. NR P.C.B. Ass'y

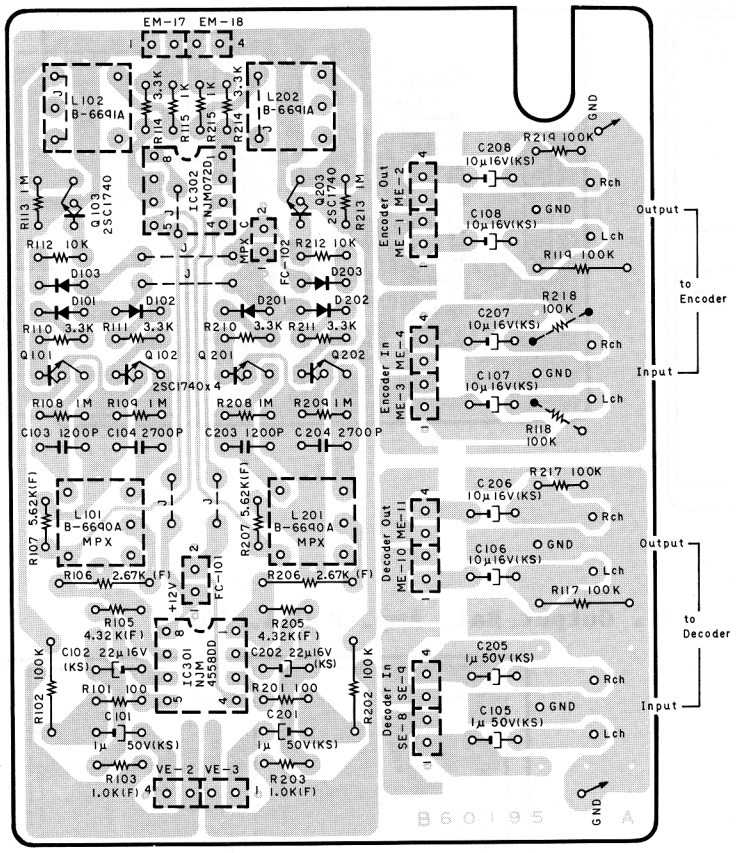


Fig. 7.12

7.13. Meter Amp. P.C.B. Ass'y

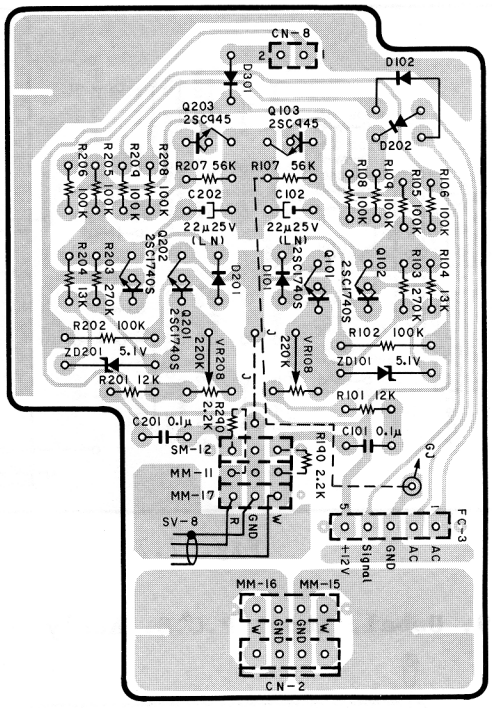


Fig. 7.13

7.14. Dolby NR Switch P.C.B. Ass'y

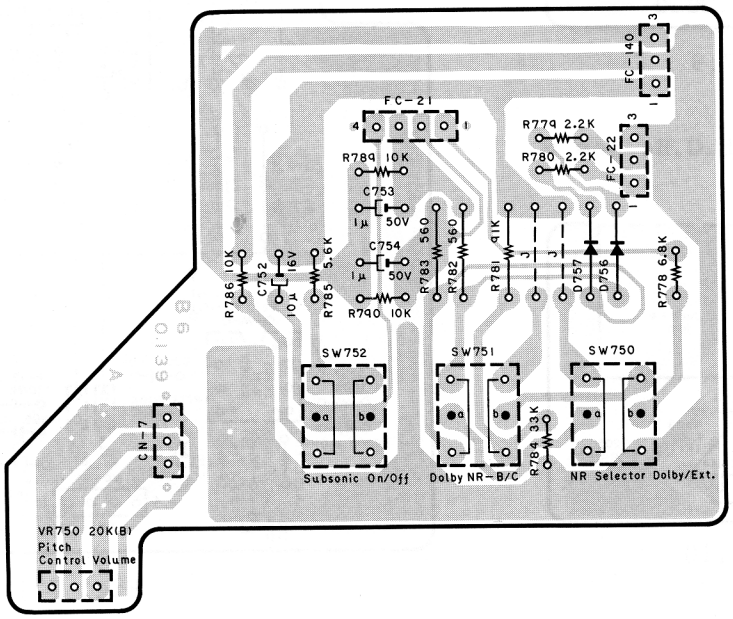


Fig. 7.14

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

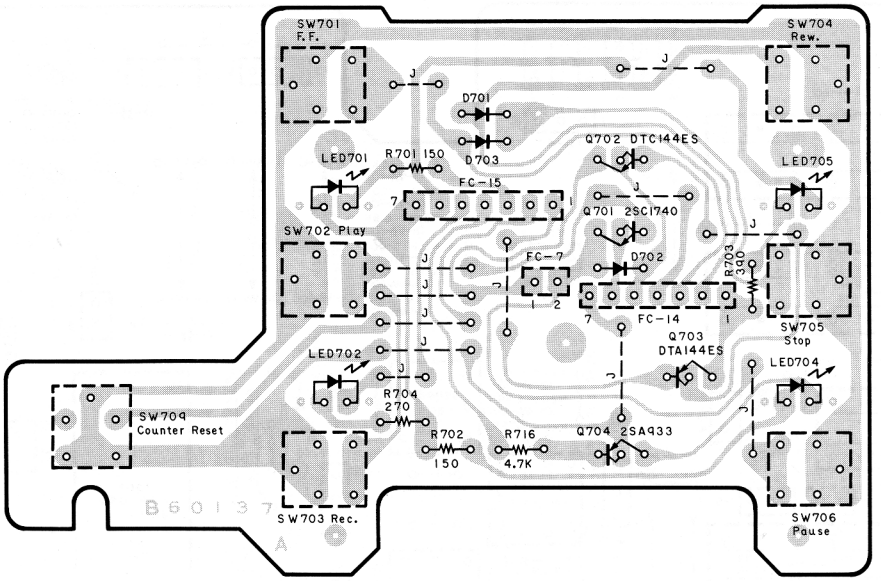


Fig. 7.15

7.16. Counter P.C.B. Ass'y

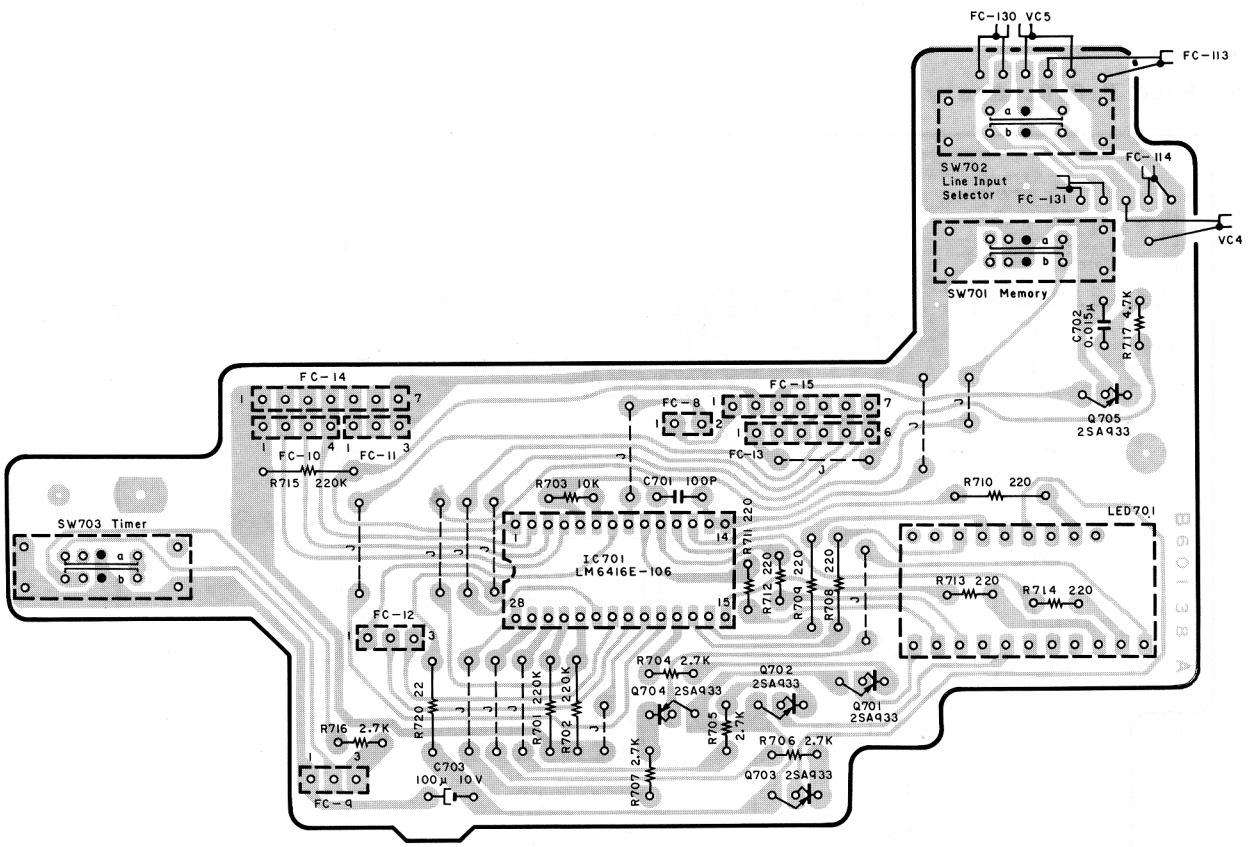


Fig. 7.16

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

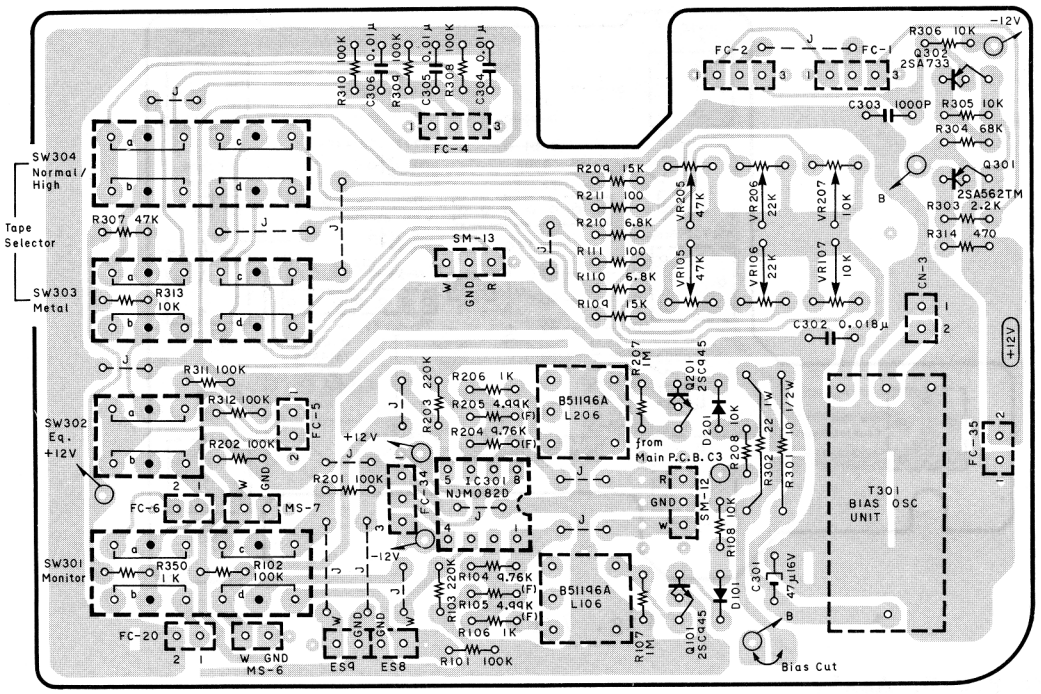


Fig. 7.17

7.18. Fuse P.C.B. Ass'y

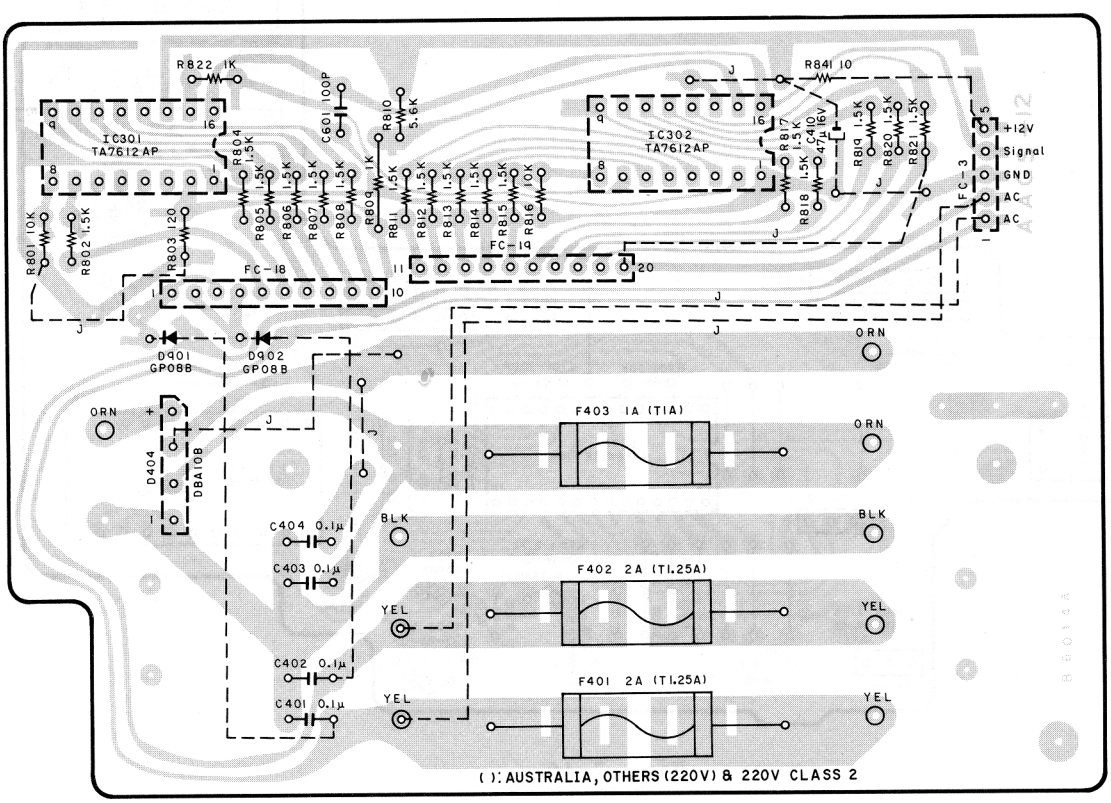


Fig. 7.18

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

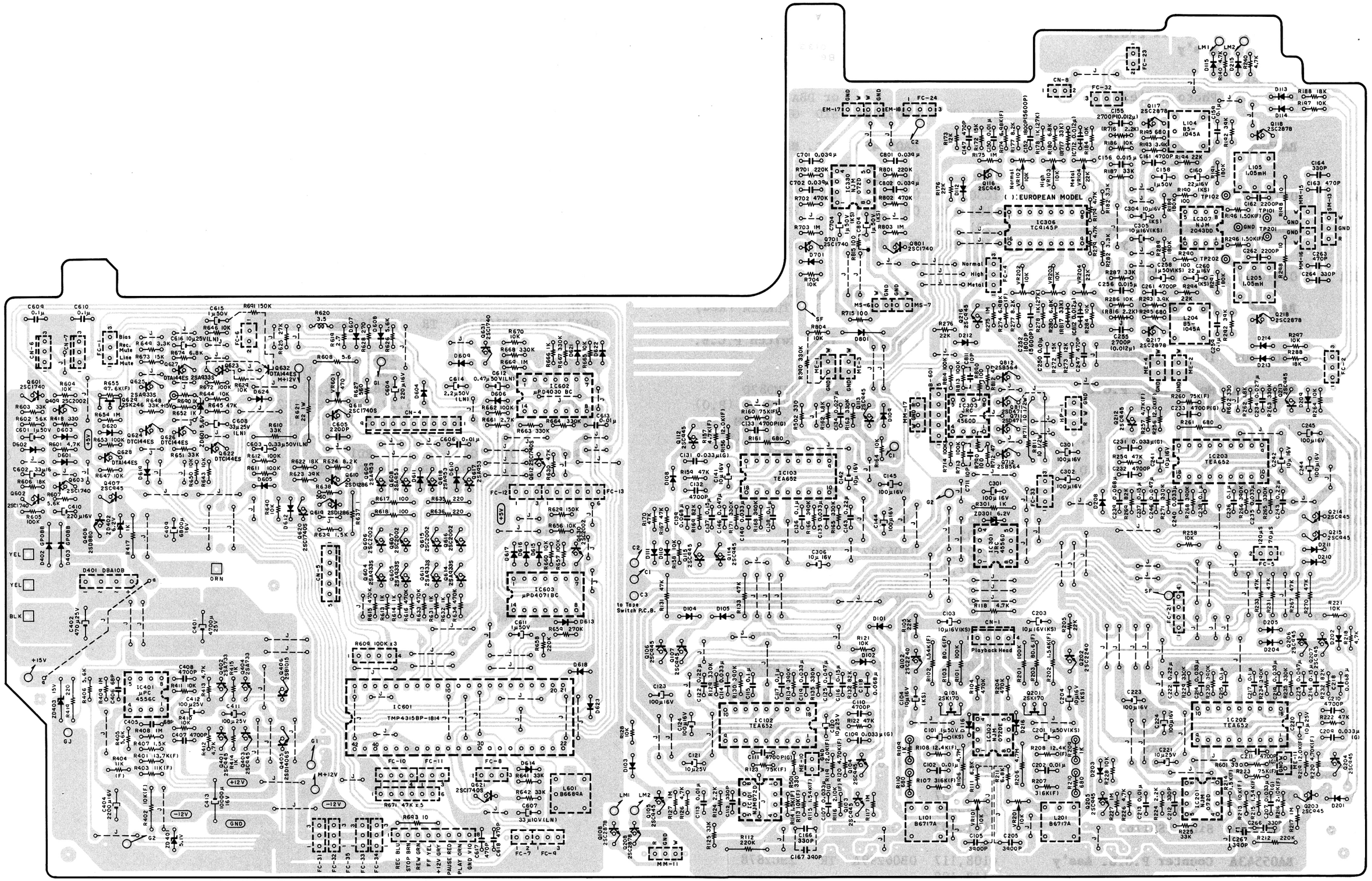


Fig. 7.19

Parts List of ICs and Semiconductors

Ref. No.	Part No.	Description
	CA80011A	**Shut-off P.C.B. Ass'y**
Q601	0B06388A	TR 2SC2812
Q602	0B06389A	Photo Reflector NJM5141
	BA05644A	**Input Bal. Amp. A P.C.B. Ass'y**
IC301	0B11004A	IC NJM2041DD
	BA05646A	**Input Bal. Amp. B P.C.B. Ass'y**
IC301	0B11004A	IC NJM2041DD
	BA05643A	**Output Bal. Amp. P.C.B. Ass'y**
IC101,201	0B06370A	IC NJM4556D
	BA05525A	**Meter Amp. P.C.B. Ass'y**
Q101,102 201,202	0B10039A	TR 2SC1740S (S,E)
Q103,203	0B01872A	TR 2SC945L (P,Q)
ZD101,201	0B12101A	ZD 5.1V 5C-1
D101,102 201,202 301	0B06398A	SiD 1SS176
	BA05529B	**Dolby NR Switch P.C.B. Ass'y**
D756,757	0B06181A	SiD 1SS53
	BA05542A	**Control Switch P.C.B. Ass'y**
Q701	0B10039A	TR 2SC1740S (S,E)
Q702	0B10062A	TR DTC144ES
Q703	0B10053A	TR DTA144ES
Q704	0B10026A	TR 2SA933S (Q,R,S)
LED701, 704,705	0B06334A	LED TLG124A (Green)
LED702	0B06333A	LED TLR124A (Red)
D701-703	0B06398A	SiD 1SS176
	BA05543A	**Counter P.C.B. Ass'y**
IC701	0B06368A	IC LM6416E-106
Q701-705	0B10026A	TR 2SA933S (Q,R,S)

Ref. No.	Part No.	Description
	BA05546B	**Fuse P.C.B. Ass'y**
IC301,302	0B06369A	IC TA7612AP
D404	0B06282A	Diode Bridge DBA10B or DBA10C
D901,902	0B06109A	SiD GP08B
	BA05645A	**Ext. NR P.C.B. Ass'y**
IC301	0B06146A	IC NJM4558DD
IC302	0B06457A	IC NJM072
Q101-103 201-203	0B10033A	TR 2SC1740S (S)
D101-103 201-203	0B06398A	SiD 1SS176
	BA05649A	**Tape LED P.C.B. Ass'y**
LED706	0B12258A	LED TLR02A (Red)
	BA05530A	**Tape Switch P.C.B. Ass'y**
IC301	0B06443A	IC NJM082D
Q101,201	0B01872A	TR 2SC945L (P,Q)
Q301	0B06202A	TR 2SA562TM (Y)
Q302	0B06013A	TR 2SA733 (P,Q)
D101,201	0B06398A	SiD 1SS176
	BA05517A	**Main P.C.B. Ass'y**
IC101,201 302	0B11005A	IC NJM072DE
IC102,103 202,203	0B06382A	IC TEA0652
IC301	0B06370A	IC NJM4556D
IC303	0B06217A	IC NJM4560D
IC306	0B11027A	IC TC9145P
IC307	0B06387A	IC NJM2043DD
IC330	0B06457A	IC NJM072
IC401	0B06216A	IC μPC4556C
IC601	0B11020A	IC TMP4315BP-1814
IC602	0B06317A	IC μPD4030BC
IC603	0B06214A	IC μPD4071BC
Q101,201	0B06376A	FET 2SK170 (GR)
Q102,202	0B06142A	TR 2SC2240 (BL)
Q103-107 112-116 203-207 212-216 401,403 407	0B01872A	TR 2SC945L (P,Q)
Q108,117 118,108 217,218	0B06299A	TR 2SC2878
Q402,404	0B06013A	TR 2SA733 (P,Q)
Q405	0B06452A	TR 2SD1406 (Y)

Ref. No.	Part No.	Description
Q406	0B06451A	TR 2SB1015 (Y)
Q408	0B06255A	TR 2SD880 (Y)
Q409,606 607,615 616,630	0B06322A	TR 2SC2002 (K,L)
Q601,602 603,611 612,620 621,631 701,801	0B10039A	TR 2SC1740S (S,E)
Q604,605 613,614 623,625	0B10026A	TR 2SA933S (Q,R,S)
Q608,609 617,618	0B06372A	TR 2SA953 (K,L)
Q610,619	0B06371A	TR 2SD1286 (K,L)
Q622,624 626	0B10062A	TR DTC144ES
Q627,628 632	0B10053A	TR DTA144ES
Q629	0B10022A	FET 2SK246
Q711,811	0B06066A	TR 2SD471 (L,M)
Q712,812	0B06069A	TR 2SB564 (L,M)
ZD301	0B12153A	ZD 6.2V RD6.2JS-T1B2
ZD401	0B12147A	ZD 5.1V RD5.1JS-T1B2
ZD402	0B12153A	ZD 6.2V RD6.2JS-T1B2
ZD403	0B12104A	ZD 15V RD15EB3
ZD601	0B06290A	ZD 5.6V RD5.6EB2
D101-105 108-116 201-205 208-216 601-624 701,801	0B06398A	SiD 1SS176
D401	0B06282A	Diode Bridge DBA10B or DBA10C
D402,403	0B06109A	SiD GP08B

8. SCHEMATIC DIAGRAM

8.1. Schematic Diagram

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

Caution:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 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 untill the problem is located and corrected.

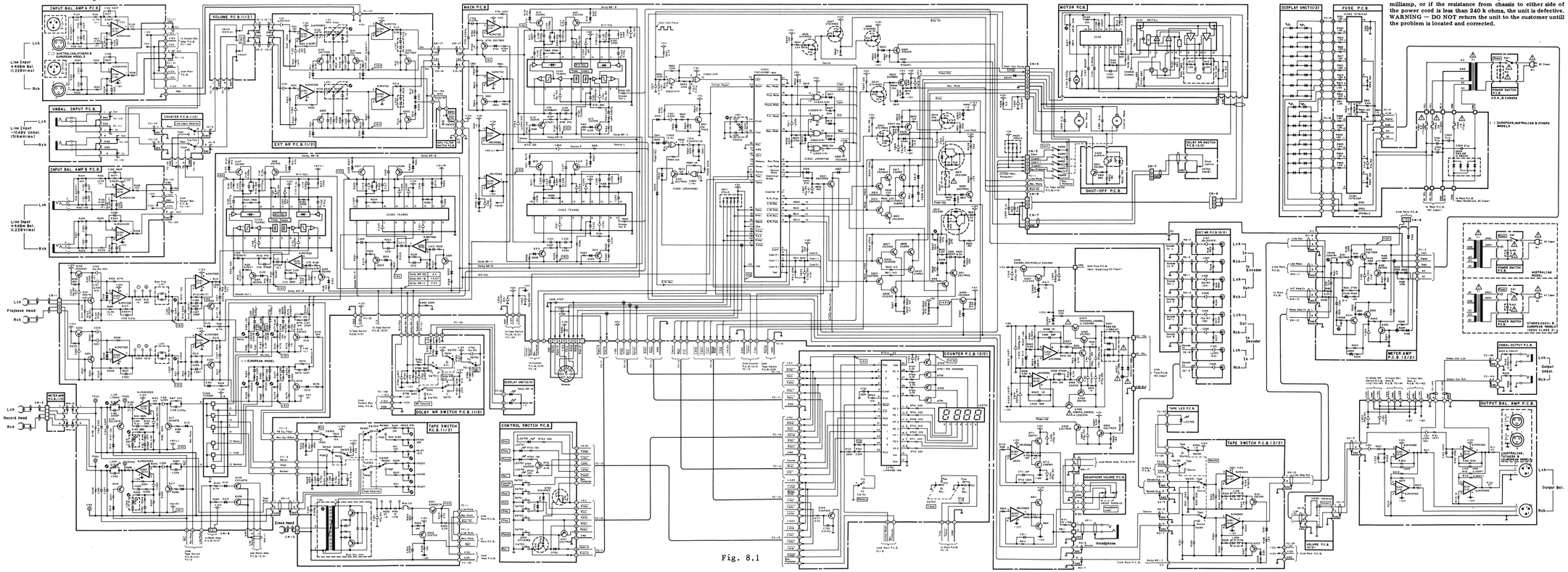


Fig. 8.1

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. IC Block Diagrams

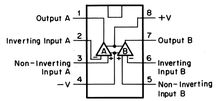


Fig. 8.1.1 Operational Amp. IC 4558DD, 072D, 072DE, 4556D, 4556C, 4560D, 2041DD, 2043DD, 082D

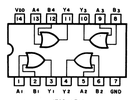


Fig. 8.1.2 OR Gate C-MOS IC μPD4071BC

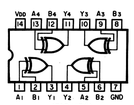


Fig. 8.1.3 Exclusive OR Gate C-MOS IC μPD4030BC

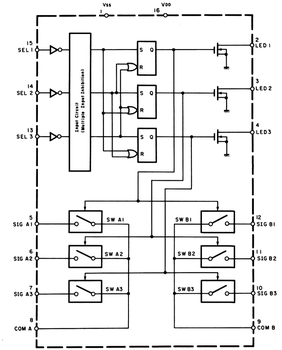


Fig. 8.1.4 Analog Switch Selector TC9145P

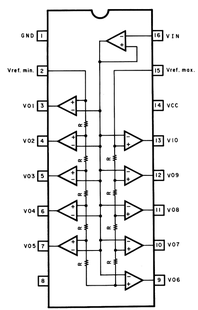


Fig. 8.1.5 Level Meter Driver TA7612AP

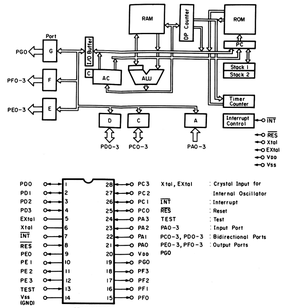


Fig. 8.1.6 4-Bit Micro-processing Unit LM6416E-106

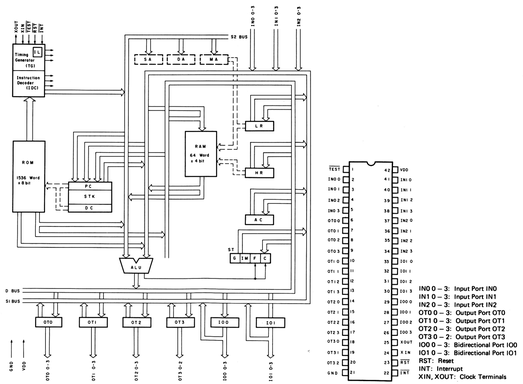


Fig. 8.1.7 4-Bit Micro-processing Unit TMP4315BP-1814

9. TIMING CHART AND EQ. AMP. FREQUENCY RESPONSE

9.1. Timing Chart

(1) Overall Timing Chart

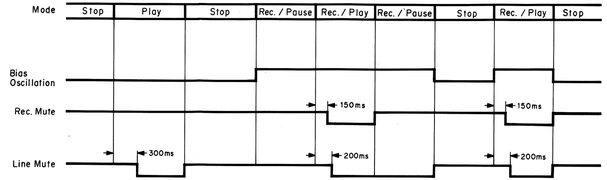


Fig. 9.1.1

(2) Mechanism Control Timing Chart

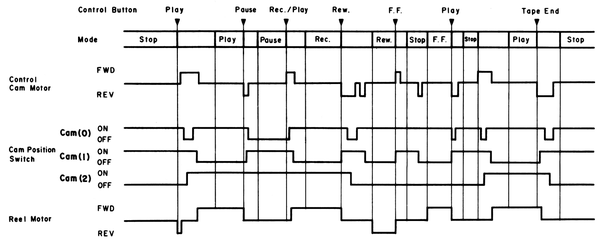


Fig. 9.1.2

9.2. Eq. Amp. Frequency Response

(1) Playback Frequency Response

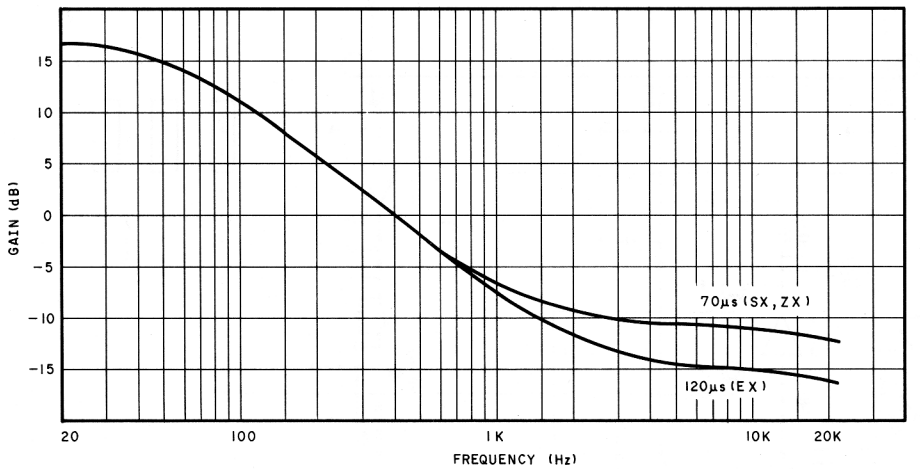


Fig. 9.2.1

(2) Record Current Frequency Response

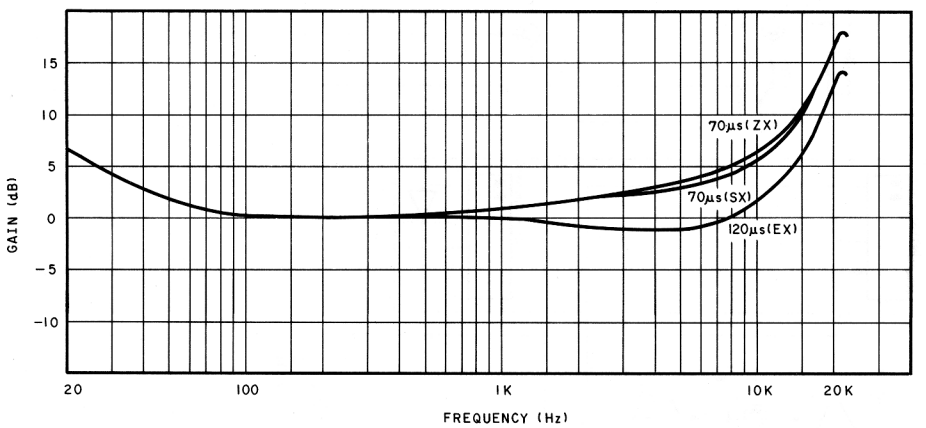


Fig. 9.2.2

10. BLOCK DIAGRAMS

10.1. Amplifier Section

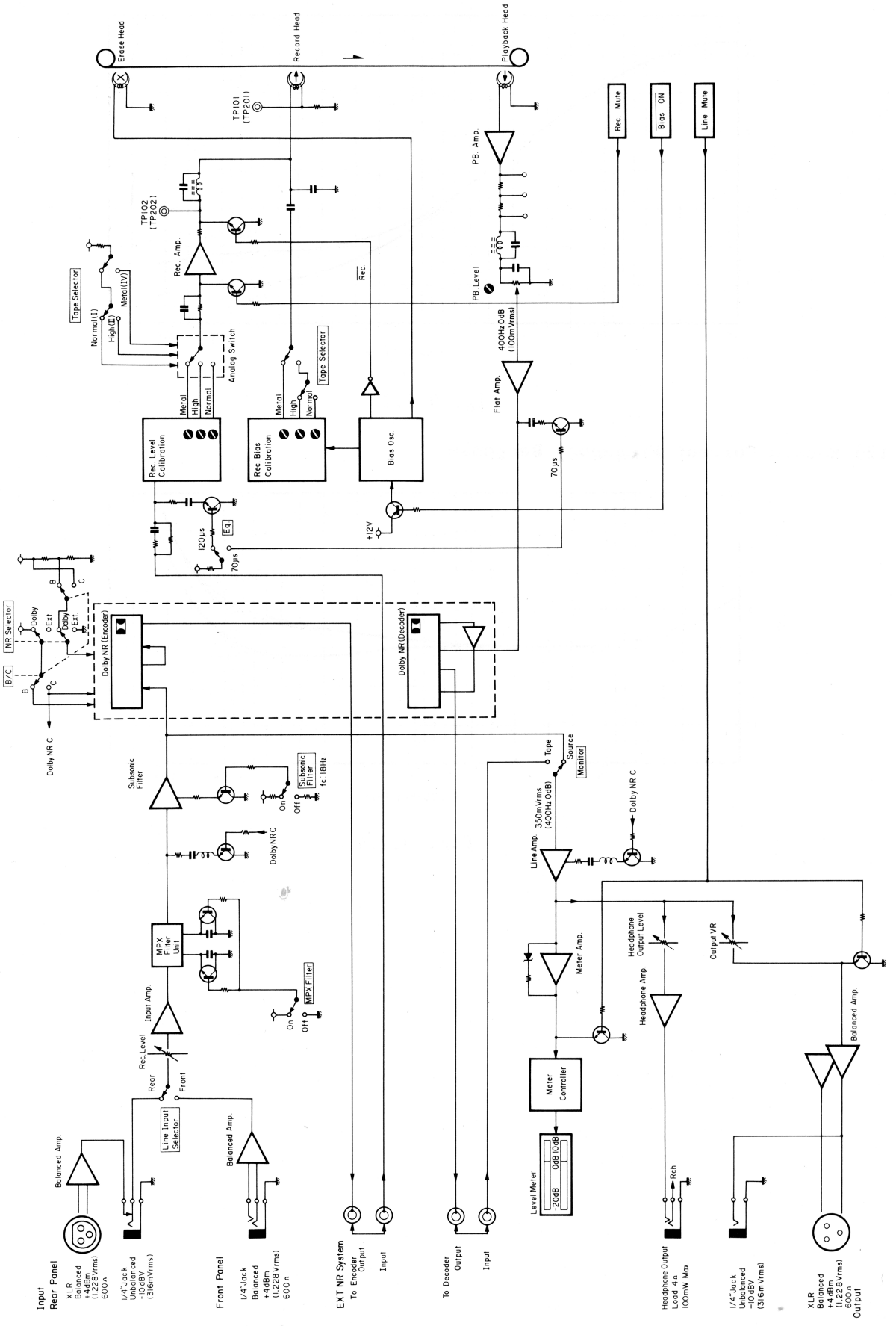


Fig. 10.1

10.2. Mechanism Control Section

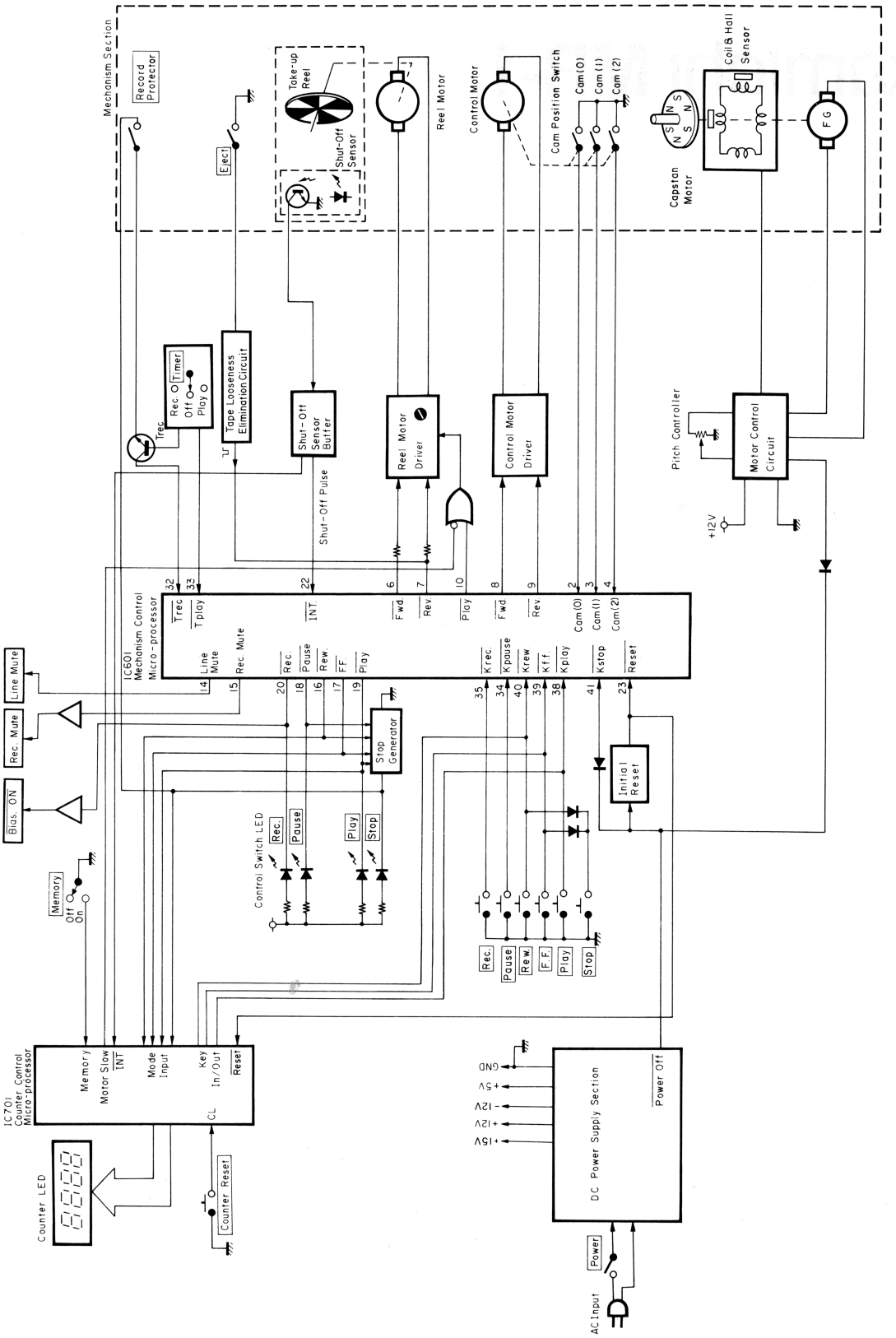


Fig. 10.2

Notes: 1. Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

2. The word "DOLBY" and the Double-D-Symbol are trademarks of Dolby Laboratories Licensing Corporation.

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Model: Nakamichi MR-1 (Discrete Head Professional Cassette Deck)

Subject: Service Manual Supplement

Date: 12 July 1985

1. Introduction

This supplement consists of the following items:

- o Information about Australia, Others (220V fixed) and 220V Class 2 Versions
- o Parts list of electrical components on P.C.B. ass'y
- o Wiring diagram

2. Information about Australia, Others (220 V fixed) and 220V Class 2 Versions

As the separate-volume Service Manual is prepared for only U.S.A. and Canada versions, this supplement is issued to inform about Australia, Others (220V fixed) and 220V Class 2 versions.
However, refer to the Service Manual together with this supplement as only differences from U.S.A. and Canada versions are stated in this supplement.

2.1. Packing Materials and Owner's Manual

Refer to the Service Manual. The following is added:

Part No.	Description	Q'ty
0D04574A	Owner's Manual Supplement	1

2.2. Test Tapes and Gauges

Refer to the Service Manual. The following is required for 220V Class 2 version.

- o Reference SX-E Tape (DA09086A) for High position

2.3. Mechanical Adjustments

Refer to the Service Manual.

2.4. Parts Location for Electrical Adjustment

Refer to the Service Manual.

2.5. Electrical Adjustments

Refer to the Service Manual. However, use a reference SX-E tape instead of a reference SX tape for 220V Class 2 version.

2.6. Mechanism Ass'y and Parts List

Refer to the Service Manual. The following parts are different from U.S.A. and Canada versions.

(1) Synthesis

Stays the same.

(2) Front Panel Ass'y (A01)

Stays the same.

Printed in Japan

(3) Synthesis Mechanism Ass'y (A02)

Ref. No.	Part No.	Description	Q'ty
15	BA05541A	Power Switch P.C.B. Ass'y	1
26	BA05517A	Main P.C.B. Ass'y (Australia & Others)	1
	BA05517A-E	Main P.C.B. Ass'y (220V Class 2)	1
27	HA04725A	Rear Panel Ass'y (Australia)	1
	HA04726A	Rear Panel Ass'y (220V Class 2 & Others)	1
-	0B02240A	Fuse T1.25A	2
-	0B08347U	Fuse T1A	1
-	0B08349B	Fuse Clip	6

(4) Front Chassis Ass'y (B01)
Stays the same.

(5) Cover Plate Ass'y (B02)
Stays the same.

(6) Mechanism Ass'y (B03)
Stays the same.

(7) Rear Panel Ass'y (B04)

Ref. No.	Part No.	Description	Q'ty
B04	HA04725A	Rear Panel Ass'y (Australia)	1
	HA04726A	Rear Panel Ass'y (220V Class 2 & Others)	1
03	BA05842A	Input Bal. Amp. A P.C.B. Ass'y	1
06	BA05841A	Output Bal. Amp. P.C.B. Ass'y	1
09	0B50036B	Power Transformer 220/240V	1
10	0B08037U	Cord Bushing C 4P-4	1
11	0B05241A	Power Cord (Australia)	1
	0B08093U	Power Cord (220V Class 2 & Others)	1

2.7. Mounting Diagrams
Refer to the Service Manual.

2.8. Schematic Diagram
Refer to the Service Manual.

2.9. Timing Chart and Eq. Amp. Frequency Response
Refer to the Service Manual.

2.10. Block Diagram
Refer to the Service Manual.

3. Parts List of Electrical Components on P.C.B. Ass'y

Notes:
1. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
2. Following transistors are interchangeable with each other.
   a. 2SA733, 2SA608SP, 2SA1048, 2SA1175
   b. 2SC945, 2SC536SP, 2SC2458, 2SC2785
3. Abbreviation for part name:
   TR - Transistor, SiD - Silicon Diode, ZD - Zener Diode
   RK - Carbon Resistor, RM - Metal Film Resistor, RF - Fail Safe Type Resistor
   CE - Electrolytic Capacitor, CM - Mylar Capacitor, CC - Ceramic Capacitor,
   CP - PP Capacitor, CT - Tantalum Capacitor, CF - Film Capacitor,

Schematic Ref. No.	Part No.	Description
	BA05537A	**Set-A P.C.B. Ass'y (U.S.A., Canada, Australia & Others)**
	BA05517A	Main P.C.B. Ass'y
	BA05525A	Meter Amp. P.C.B. Ass'y
	BA05530A	Tape Switch P.C.B. Ass'y
	BA05544A	Volume P.C.B. Ass'y
	BA05649A	Tape LED P.C.B. Ass'y
	BA05650A	MPX Filter Switch P.C.B. Ass'y
	BA05537A-E	**Set-A P.C.B. Ass'y (220V Class 2)**
	BA05517A-E	Main P.C.B. Ass'y
	BA05525A	Meter Amp. P.C.B. Ass'y
	BA05530A	Tape Switch P.C.B. Ass'y
	BA05544A	Volume P.C.B. Ass'y
	BA05649A	Tape LED P.C.B. Ass'y
	BA05650A	MPX Filter Switch P.C.B. Ass'y
	BA05538A	**Set-B P.C.B. Ass'y**
	BA05529B	Dolby NR Switch P.C.B. Ass'y
	BA05645A	Ext. NR P.C.B. Ass'y
	BA05546B	Fuse P.C.B. Ass'y

Schematic Ref. No.	Part No.	Description
	BA05540A	**Power Switch P.C.B. Ass'y (U.S.A. & Canada)**
	0B60140A	Power Switch P.C.B.
SW1	0B70002A	Power Switch
M2	0B08342A	Spark Killer
	0J04763A	Power Switch Holder (1)
	0E00752A	Eyelet 2x3 (2)
	0E00612A	M3x6 ⊕Pan (2A) (2)
	BA05541A	**Power Switch P.C.B. Ass'y (Australia, 220V Class 2 & Others)**
	0B60140A	Power Switch P.C.B.
SW1	0B70002A	Power Switch
M2	0B08445A	Spark Killer
	0J04763A	Power Switch Holder (1)
	0B90059A	Spark Killer Cover (1)
	0E00752A	Eyelet 2x3 (2)
	0E00612A	M3x6 ⊕Pan (2A) (2)
	CA80011A	**Shut-off P.C.B. Ass'y**
	0C80047A	Shut-off P.C.B.
Q601	0B06388A	TR 2SC2812
Q602	0B06389A	Photo Reflector NJM5141
R601	0B09840A	RK 680
R602	0B09841A	RK 18K
R603	0C81330A	RM 750
	BA05649A	**Tape LED P.C.B. Ass'y**
	0B60199A	Tape LED P.C.B.
LED706	0B12258A	LED Red TLR102A
FC20	0B81065A	Wire Mate 2P
	BA05650A	**MPX Filter Switch P.C.B. Ass'y**
	0B60200A	MPX Filter Switch P.C.B.
R301	0B09693A	RK 4.7K 1/6W J
SW305	0B70039A	Slide Switch
FC24	0B81010A	Dip Mate 3P
FC102	0B81002A	Dip Mate 2P
	BA05547A	**Headphone Volume P.C.B. Ass'y**
	0B60202A	Headphone Volume P.C.B.
VR302	0B30020A	Volume 50K (A)x2
	0J04842C	Holder (1)

Schematic Ref. No.	Part No.	Description
	BA05544A	**Volume P.C.B. Ass'y**
	0B60135A	Volume P.C.B.
VR109,209	0B31002A	VR 100K (A)
VR301	0B31001A	VR 10K (A)x2
	0B81011A	Dip Mate 4P (1)
	0B81012A	Dip Mate 5P (1)
	0B02349A	JP Connector 4P (1)
	BA05644A	**Input Bal. Amp. A P.C.B. Ass'y (U.S.A. & Canada)**
	0B60194A	Input Bal. Amp. A P.C.B.
IC301	0B11004A	IC NJM2041DD
R101,201	0B22630A	RM 604 1/4W F
R102,104 108,202 204,208	0B09653A	RK 100 1/6W J
R103,105 203,205	0B22353A	RM 12.4K 1/6W F
R106,107 206,207	0B22286A	RM 3.3K 1/6W F
C101,103 201,203	0B41386A	CP 100P 50V J
C105,106 205,206	0B09323A	CP 560P 100V J
	0B02348A	JP Connector 3P (1)
	0B81002A	Dip Mate 2P (1)
	0B81014A	Dip Mate 7P (1)
	0B81343A	Connector XLB-3-31PCV (2)
	0E00792A	M2.6x6 ⊕Pan (4)
	BA05842A	**Input Bal. Amp. A P.C.B. Ass'y (Australia, 220V Class 2 & Others)**
	0B60194A	Input Bal. Amp. A P.C.B.
IC301	0B11004A	IC NJM2041DD
R101,201	0B22630A	RM 604 1/4W F
R102,104 108,202 204,208	0B09653A	RK 100 1/6W J
R103,105 203,205	0B22353A	RM 12.4K 1/6W F
R106,107 206,207	0B22286A	RM 3.3K 1/6W F
C101,103 201,203	0B41386A	CP 100P 50V J
C105,106 205,206	0B09323A	CP 560P 100V J
	0B02348A	JP Connector 3P (1)
	0B81002A	Dip Mate 2P (1)
	0B81014A	Dip Mate 7P (1)
	0B81344A	Connector XLB-3-32PCV (2)
	0E00792A	M2.6x6 ⊕Pan (4)

Schematic Ref. No.	Part No.	Description
	BA05646A	**Input Bal. Amp. B P.C.B. Ass'y**
	0B60196A	Input Bal. Amp. B P.C.B.
IC301	0B11004A	IC NJM2041DD
R101,201	0B22630A	RM 604 1/4W F
R102,104 108,202 204,208	0B09653A	RK 100 1/6W J
R103,105 203,205	0B22353A	RM 12.4K 1/6W F
R106,107 206,207	0B22286A	RM 3.3K 1/6W F
C101,103 201,203	0B41386A	CP 100P 50V J
C105,106 205,206	0B09323A	CP 560P 100V J
FC130,131 141	0B81014A	Dip Mate 7P (1)
	0B81289A	1/4 Inch Jack (2)
	BA05647A	**Unbal. Input P.C.B. Ass'y**
	0B60197A	Unbal. Input P.C.B.
FC111-114	0B81396A	JP Connector 8P (1)
	0B81289A	1/4 Inch Jack (2)
	BA05648A	**Unbal. Output P.C.B. Ass'y**
	0B60198A	Unbal. Output P.C.B.
R102,202	0B22308A	RM 4.99K 1/6W F
R103,203	0B22305A	RM 4.7K 1/6W F
FC144,145	0B81011A	Dip Mate 4P (1)
	0B81289A	1/4 Inch Jack (2)
	BA05643A	**Output Bal. Amp. P.C.B. Ass'y (U.S.A. & Canada)**
	0B60193A	Output Bal. Amp. P.C.B.
IC101,201	0B06370A	IC NJM4556D
R101,201	0B22229A	RM 1K 1/6W F
R102,103 202,203	0B09725A	RK 100K 1/6W J
R111,122 211,222	0B05923A	RF 47 1/4W J
R112,113 212,213	0B22263A	RM 2.1K 1/6W F
R114,214	0B09677A	RK 1K 1/6W J
C101,201	0B09814A	CE 1μ 50V (KS)
C104,105 204,205	0B41386A	CP 100P 50V J
C301,302	0B01400A	CE 100μ 16V
FC144/145	0B02349A	JP Connector 4P (1)
	0B02348A	JP Connector 3P (1)
	0B81002A	Dip Mate 2P (2)
	0B81010A	Dip Mate 3P (2)
	0B81344A	Connector XLB-3-32PCV (2)
	0E00792A	M2.6x6 ⊕Pan (4)

Schematic Ref. No.	Part No.	Description
	BA05841A	**Output Bal. Amp. P.C.B. Ass'y (Australia, 220V Class 2 & Others)**
	0B60193A	Output Bal. Amp. P.C.B.
IC101,201	0B06370A	IC NJM4556D
R101,201	0B22229A	RM 1K 1/6W F
R102,103 202,203	0B09725A	RK 100K 1/6W J
R111,122 211,222	0B05923A	RF 47 1/4W J
R112,113 212,213	0B22263A	RM 2.1K 1/6W F
R114,214	0B09677A	RK 1K 1/6W J
C101,201	0B09814A	CE 1μ 50V (KS)
C104,105 204,205	0B41386A	CP 100P 50V J
C301,302	0B01400A	CE 100μ 16V
FC144,145	0B02349A	JP Connector 4P (1)
	0B02348A	JP Connector 3P (1)
	0B81002A	Dip Mate 2P (2)
	0B81010A	Dip Mate 3P (2)
	0B81343A	Connector XLB-3-31PCV (2)
	0E00792A	M2.6x6 ⊕Pan (4)
	BA05645A	**Ext. NR P.C.B. Ass'y**
	0B60195A	Ext. NR P.C.B.
IC301	0B06146A	IC NJM4558DD
IC302	0B06457A	IC NJM072
Q101-103 201-203	0B10033A	TR 2SC1740S (S)
D101-103 201-203	0B06398A	SiD 1SS176
L101,201	0B06690A	L-C Block (Blue)
L102,202	0B06691A	L-C Block (Yellow)
R101,201	0B09653A	RK 100 1/6W J
R102,202	0B09725A	RK 100K 1/6W J
R103,203	0B22229A	RM 1K 1/6W F
R105,205	0B22301A	RM 4.32K 1/6W F
R106,206	0B22275A	RM 2.67K 1/6W F
R107,207	0B22315A	RM 5.62K 1/6W F
R108,109 113,208 209,213	0B09749A	RK 1M 1/6W J
R110,111 114,210 211,214	0B09689A	RK 3.3K 1/6W J
R112,212	0B09701A	RK 10K 1/6W J
R115,215	0B09677A	RK 1K 1/6W J
R117,118 119,217 218,219	0B01889A	RK 100K 1/4W J
C101,105 201,205	0B09814A	CE 1μ 50V (KS)
C102,202	0B09932A	CE 22μ 16V (KS)
C103,203	0B05687A	CM 1200P 50V J
C104,204	0B09189A	CM 2700P 50V J
C106,107 108,206 207,208	0B09816A	CE 10μ 16V (KS)
	0B02349A	JP Connector 4P (6)
	0B81163A	Wire Trap 2P (2)
	0B81474A	4P Pin Jack (2)

Schematic Ref. No.	Part No.	Description
	BA05525A	**Meter Amp. P.C.B. Ass'y**
	0B60136A	Meter Amp. P.C.B.
Q101,102 201,202	0B10039A	TR 2SC1740S (S,E)
Q103,203	0B01872A	TR 2SC945L (P,Q)
ZD101,201	0B12101A	ZD 5V 5C-1
D101,102 201,202 303	0B06398A	SiD 1SS176
VR108,208	0B32026A	Semi-fixed VR 220K
R101,201	0B09703A	RK 12K 1/6W J
R102,202	0B01889A	RK 100K 1/4W J
R103,203	0B09735A	RK 270K 1/6W J
R104,204	0B09704A	RK 13K 1/6W J
R105,106 108,109 205,206 208,209	0B09725A	RK 100K 1/6W J
R107,207	0B09719A	RK 56K 1/6W J
R190,290	0B09685A	RK 2.2K 1/6W J
C101,201	0B09868A	CF 0.1μ 50V J
C102,202	0B09137A	CE 22μ 25V (LN)
CN2	0B81476A	4P-T Post
CN8	0B81175A	B-B Connector 2P
FC3	0B81012A	Dip Mate 5P
MM15/16	0B81011A	Dip Mate 4P (1)
	0B81010A	Dip Mate 3P (2)
	BA05529B	**Dolby NR Switch P.C.B. Ass'y**
	0B60139A	Dolby NR Switch P.C.B.
D756,757	0B06181A	SiD 1SS53
VR750	0B30019A	VR 20K (B)
R778	0B09697A	RK 6.8K 1/6W J
R779,780	0B09685A	RK 2.2K 1/6W J
R781	0B09391A	RK 91K 1/4W J
R782,783	0B05575A	RK 560 1/4W J
R784	0B09713A	RK 33K 1/6W J
R785	0B09695A	RK 5.6K 1/6W J
R786,789 790	0B09701A	RK 10K 1/6W J
C752	0B01412A	CE 10μ 16V
C753,754	0B01405A	CE 1μ 50V
SW751-753	0B70024A	Push Switch 3-Key (1)
FC21	0B81011A	Dip Mate 4P
	0B81395A	JP Connector 7P (1)
	0J04768B	Earth Plate A (1)
	BA05542A	**Control Switch P.C.B. Ass'y**
	0B60137A	Control Switch P.C.B.
Q701	0B10039A	TR 2SC1740S (S,E)
Q702	0B10062A	TR DTC144ES
Q703	0B10053A	TR DTA144ES
Q704	0B10026A	TR 2SA933S (Q,R,S)
LED701 704,705	0B06334A	LED Green TLG124A
LED702	0B06333A	LED Red TLR124A
D701-703	0B06398A	SiD 1SS176
R701	0B05795A	RK 150 1/4W J
R702	0B09657A	RK 150 1/6W J
R703	0B09667A	RK 390 1/6W J
R704	0B09663A	RK 270 1/6W J
R716	0B09693A	RK 4.7K 1/6W J
SW701-706 709	0B70004A	Touch Switch
	0J04744B	LED Reflector (4)

Schematic Ref. No.	Part No.	Description
	BA05543A	**Counter P.C.B. Ass'y**
	0B60138A	Counter P.C.B.
IC701	0B06368A	IC LM6416E-106
Q701-705	0B10026A	TR 2SA933S (Q,R,S)
R701,702 715	0B05625A	RK 220K 1/4W J
R703	0B09701A	RK 10K 1/6W J
R704-707	0B09687A	RK 2.7K 1/6W J (5)
R708,709 710	0B09661A	RK 220 1/6W J
R711,712 713,714	0B01933A	RK 220 1/4W J
R717	0B09693A	RK 4.7K 1/6W J
R720	0B05579A	RK 22 1/4W J
C701	0B09282A	CC 100P 50V K
C702	0B05557A	CM 0.015μ 50V J
C703	0B05885A	CE 100μ 10V
SW701,702	0B70010A	Slide Switch
SW703	0B07437A	Slide Switch
	0B81016A	Socket 9P (1)
	0B81017A	Socket 11P (1)
	BA05530A	**Tape Switch P.C.B. Ass'y**
	0B60134A	Tape Switch P.C.B.
IC301	0B06443A	IC NJM082D
Q101,201	0B01872A	TR 2SC945L (P,Q)
Q301	0B06202A	TR 2SA562TM (Y)
Q302	0B06013A	TR 2SA733 (P,Q)
D101,201	0B06398A	SiD 1SS176
T301	0B51047A	Bias Osc. Unit
L106,206	0B51196A	L-C Block
VR105,205	0B32010A	Semi-fixed VR 47K
VR106,206	0B32009A	Semi-fixed VR 22K
VR107,207	0B32008A	Semi-fixed VR 10K
R101,102 201,202 308-312	0B09725A	RK 100K 1/6W J (9)
R103,203	0B09733A	RK 220K 1/6W J
R104,204	0B22342A	RM 9.76K 1/6W F
R105,205	0B22308A	RM 4.99K 1/6W F
R106,206 350	0B09677A	RK 1K 1/6W J
R107,207	0B09749A	RK 1M 1/6W J
R108,208 305,306 313	0B09701A	RK 10K 1/6W J
R109,209	0B09705A	RK 15K 1/6W J
R110,210	0B09697A	RK 6.8K 1/6W J
R111,211	0B09653A	RK 100 1/6W J
R301	0B09936A	RF 10 1/2W J
R302	0B09831A	RF 22 1W J
R303	0B09685A	RK 2.2K 1/6W J
R304	0B09721A	RK 68K 1/6W J
R307	0B09717A	RK 47K 1/6W J
R314	0B09669A	RK 470 1/6W J
C301	0B01403A	CE 47μ 16V
C302	0B09538A	CP 0.018μ 100V G
C303	0B09844A	CM 1000P 50V J
C304,305 306	0B05681A	CM 0.01μ 50V J
SW301-304	0B70030A	Push Switch 5-Key (1)
CN3	0B81051A	2P-S Post
FC1,2,4,34 SM12,13	0B81010A	Dip Mate 3P (6)
FC5,35	0B81002A	Dip Mate 2P (2)
FC6/MS7 FC20/MS6	0B81012A	Dip Mate 5P (2)
ES8/9	0B81011A	Dip Mate 4P (1)
	0J04768B	Earth Plate A (1)

Schematic Ref. No.	Part No.	Description
	BA05546B	**Fuse P.C.B. Ass'y**
	0B60141A	Fuse P.C.B.
IC301,302	0B06369A	IC TA7612AP
D404	0B06282A	Diode Bridge DBA10
D901,902	0B06109A	SiD GP08B
R801,816	0B09701A	RK 10K 1/6W J
R802 804-808 811-815 817-821	0B09681A	RK 1.5K 1/6W J (16)
R803	0B09655A	RK 120 1/6W J
R809,822	0B09677A	RK 1K 1/6W J
R810	0B09695A	RK 5.6K 1/6W J
R841	0B05936A	RK 10 1/4W J
C401-404	0B09292A	CC 0.1μ 50V Z
C410	0B09218A	CE 47μ 16V (LN)
C601	0B09282A	CC 100P 50V K
FC3	0B02350A	JP Connector 5P
FC18,19	0B02355A	JP Connector 10P

Schematic Ref. No.	Part No.	Description
	BA05517A	Main P.C.B. Ass'y (U.S.A., Canada, Australia & Others)
	— PB Eq. Amp. —	
IC301	0B06370A	IC 4556D
IC302	0B11005A	IC NJM072DE
Q101,201	0B06376A	FET 2SK170 (GR)
Q102,202	0B06142A	TR 2SC2240 (BL)
ZD301	0B12153A	ZD 6.2V RD6.2JS-T1B2
D116,216	0B06398A	SiD 1SS176
L101,201	0B06717A	Trap Unit
VR101,201	0B32008A	Semi-fixed VR 10K
R101,201	0B01889A	RK 100K 1/4W J
R102,202	0B09757A	RM 1.54K 1/4W F
R103,203	0B09891A	RM 80.6 1/4W F
R104,204	0B09741A	RK 470K 1/6W J
R105,205	0B09709A	RK 22K 1/6W J
R106,206	0B22548A	RM 4.7M 1/4W J
R107,207	0B22512A	RM 316K 1/6W F
R108,208	0B22353A	RM 12.4K 1/6W F
R109,209	0B09677A	RK 1K 1/6W J
R110,210	0B09673A	RK 680 1/6W J
R111,211	0B09697A	RK 6.8K 1/6W J
R301	0B01857A	RK 1K 1/4W J
C101,201	0B09814A	CE 1μ 50V (KS)
C102,202	0B09591A	CP 0.01μ 100V J
C103,104 203,204	0B09816A	CE 10μ 16V (KS)
C105,205	0B01804A	CM 3900P 50V J
C301	0B01400A	CE 100μ 16V
CN1	0B02242A	4P-T Post
	— Rec. Eq. Amp. —	
IC307	0B06387A	IC 2043DD
Q117,118 217,218	0B06299A	TR 2SC2878
D113,114 213,214	0B06398A	SiD 1SS176
L104,204	0B51045A	L-C Block
L105,205	0B06705A	Trap Coil 1.05mH
R188,288	0B09707A	RK 18K 1/6W J
R189,191 289,291	0B09731A	RK 180K 1/6W J
R190,290	0B09653A	RK 100 1/6W J
R192,292	0B09715A	RK 39K 1/6W J
R193,293	0B09691A	RK 3.9K 1/6W J
R194,294	0B09709A	RK 22K 1/6W J
R195,295	0B09673A	RK 680 1/6W J
R196,296	0B22247A	RM 1.5K 1/6W F
R197,297	0B09701A	RK 10K 1/6W J
R198,298	0B05936A	RK 10 1/4W J
C158,258	0B40368A	CE 1μ 50V
C159,259	0B01780A	CM 0.1μ 50V J
C160,260	0B09932A	CE 22μ 16V (KS)
C161,261	0B05652A	CM 4700P 50V J
C162,262	0B09834A	CP 2200P 100V J
C163,263	0B09270A	CP 470P 100V J
C164,264	0B09322A	CP 330P 100V J
C304,305	0B09816A	CE 10μ 16V (KS)
	— Rec. Cal. —	
IC306	0B11027A	IC TC9145P
Q116,216	0B01872A	TR 2SC945L (P,Q)
D112,212	0B06398A	SiD 1SS176
VR102,103 202,203	0B32008A	Semi-fixed VR 10K
VR104,204	0B32009A	Semi-fixed VR 22K
R172,272	0B09705A	RK 15K 1/6W J
R173,273	0B09703A	RK 12K 1/6W J
R174,274	0B22326A	RM 6.98K 1/6W F
R175,275	0B09749A	RK 1M 1/6W J
R176,276	0B09709A	RK 22K 1/6W J
R177,277	0B09699A	RK 8.2K 1/6W J
R178,278	0B09677A	RK 1K 1/6W J
R179,279	0B09693A	RK 4.7K 1/6W J
R180,280	0B09697A	RK 6.8K 1/6W J
R182,282	0B09689A	RK 3.3K 1/6W J
R184,186 284,286	0B09701A	RK 10K 1/6W J
R187,287	0B09713A	RK 33K 1/6W J
C147,247	0B09270A	CP 470P 100V J
C150,250	0B05681A	CM 0.01μ 50V J
C152,252	0B01913A	CM 1800P 50V J
C155,255	0B09189A	CM 2700P 50V J
C156,256	0B41096A	CM 0.015μ 50V J
IC330	0B06457A	IC NJM072
Q701,801	0B10039A	TR 2SC1740S (S,E)
D701,801	0B06398A	SiD 1SS176
R390	0B09737A	RK 330K 1/6W J
R701,801	0B09733A	RK 220K 1/6W J
R702,802	0B09741A	RK 470K 1/6W J
R703,803	0B09749A	RK 1M 1/6W J
R704,804	0B09701A	RK 10K 1/6W J
R715,815	0B09653A	RK 100 1/6W J
C701,702 801,802	0B05660A	CM 0.039μ 50V J
C704,804	0B09814A	CE 1μ 50V (KS)
	— Encoder —	
IC103,203	0B06382A	IC TEA0652
Q112,113 114,115 212,213 214,215	0B01872A	TR 2SC945L (P,Q)
D108-111 208-211	0B06398A	SiD 1SS176 (8)
R156,256	0B22351A	RM 12K 1/6W F
R157,257	0B22305A	RM 4.7K 1/6W F
R158,164 258,264	0B09701A	RK 10K 1/6W J
R159,167 170,259	0B09717A	RK 47K 1/6W J
R160,260	0B22443A	RM 75K 1/6W F
R161,261	0B05794A	RK 680 1/4W J
R162,262	0B09683A	RK 1.8K 1/6W J
R163,165 171,263 265,271	0B09737A	RK 330K 1/6W J
R166,168 266,268	0B09739A	RK 390K 1/6W J
R169,269	0B09723A	RK 82K 1/6W J
R267,270	0B05641A	RK 47K 1/4W J
R502,602	0B09665A	RK 330 1/6W J
C131,231	0B41161A	CP 0.033μ 100V G
C132,232	0B05652A	CM 4700P 50V J
C133,233	0B41141A	CP 4700P 100V G
C134,234	0B09045A	CM 0.027μ 50V J
C135,140 235,240	0B09862A	CF 0.033μ 50V J
C136,138 236,238	0B09868A	CF 0.1μ 50V J
C137,237	0B09870A	CF 0.15μ 50V J
C139,239	0B09866A	CF 0.068μ 50V J
C141,142 241,242 306	0B01412A	CE 10μ 16V
C143,243	0B09872A	CF 0.22μ 50V J
C144,145 244,245	0B01400A	CE 100μ 16V
C146,246	0B09864A	CF 0.047μ 50V J
	— Decoder —	
IC101,201	0B11005A	IC NJM072DE
IC102,202	0B06382A	IC TEA0652
Q103-107 203-207	0B01872A	TR 2SC945L (P,Q) (10)
D101-105 201-205	0B06398A	SiD 1SS176 (10)
R112,212	0B05625A	RK 220K 1/4W J
R113,213	0B22343A	RM 10K 1/6W F
R121,128 221,228	0B09701A	RK 10K 1/6W J
R114,214	0B22247A	RM 1.5K 1/6W F
R115,215	0B22248A	RM 1.54K 1/6W F
R116,216	0B22263A	RM 2.1K 1/6W F
R117,127 217,227	0B09749A	RK 1M 1/6W J
R118	0B01846A	RK 4.7K 1/4W J
R119,219	0B22351A	RM 12K 1/6W F
R120,220	0B22305A	RM 4.7K 1/6W F
R122,222	0B09717A	RK 47K 1/6W J
R123,223	0B22443A	RM 75K 1/6W F
R124,224	0B09685A	RK 2.2K 1/6W J
R125,225	0B09713A	RK 33K 1/6W J
R126,218 226	0B09693A	RK 4.7K 1/6W J
R129,135 229,235	0B09737A	RK 330K 1/6W J
R130,134 230,234	0B09739A	RK 390K 1/6W J
R131,133 231,233	0B05641A	RK 47K 1/4W J
R132,232	0B09723A	RK 82K 1/6W J
R501,601	0B09665A	RK 330 1/6W J
C107,109 207,209	0B41161A	CP 0.033μ 100V G
C110,210	0B05652A	CM 4700P 50V J
C111,211	0B41141A	CP 4700P 100V G
C112,166 212,266	0B09322A	CP 330P 100V J
C113,213	0B05681A	CM 0.01μ 50V J
C114,119 214,219	0B09862A	CF 0.033μ 50V J
C115,117 215,217	0B09868A	CF 0.1μ 50V J
C116,216	0B09870A	CF 0.15μ 50V J
C118,218	0B09866A	CF 0.068μ 50V J
C120,121 220,221	0B01412A	CE 10μ 16V
C122,222	0B09872A	CF 0.22μ 50V J
C123,124 223,224	0B01400A	CE 100μ 16V
C125,225	0B09864A	CF 0.047μ 50V J
C167,267	0B41002A	CP 390P 100V J
	— Headphone Amp. —	
IC303	0B06217A	IC JRC4560D
Q108,208	0B06299A	TR 2SC2878
Q711,811	0B06066A	TR 2SD471 (L,M)
Q712,812	0B06069A	TR 2SB564 (L,M)
D115,215	0B06398A	SiD 1SS176
R140,240	0B09693A	RK 4.7K 1/6W J
R711,811	0B09936A	RF 10 1/2W J
R712,812	0B09645A	RK 47 1/6W J
R713,714 813,814	0B09725A	RK 100K 1/6W J
R790,890	0B09653A	RK 100 1/6W J
C301,302	0B01400A	CE 100μ 16V
C711,811	0B09277A	CC 10P 50V J
	— Logic —	
IC601	0B11020A	IC TMP4315BP-1814
IC602	0B06317A	IC μPD4030BC
IC603	0B06214A	IC μPD4071BC
Q601,602 603,611 612,620 621,631	0B10039A	TR 2SC1740S (S,E)
Q604,605 613,614 623,625	0B10026A	TR 2SA933S (Q,R,S)
Q606,607 615,616 630	0B06322A	TR 2SC2002 (K,L)
Q608,609 617,618	0B06372A	TR 2SA953 (K,L)
Q610,619	0B06371A	TR 2SD1286 (K,L)
Q622,624 626	0B10062A	TR DTC144ES
Q627,628 632	0B10053A	TR DTA144ES
Q629	0B10022A	FET 2SK246
ZD601	0B06290A	ZD 5.6V RD5.6EB2
D601-624	0B06398A	SiD 1SS176
L601	0B06689A	L-C Block (Black)
VR601	0B32007A	Semi-fixed VR 470
R601	0B09693A	RK 4.7K 1/6W J
R602	0B09719A	RK 56K 1/6W J
R603,641 642,648 651	0B09713A	RK 33K 1/6W J
R604,640 643,644 646,647 650,656 660,665 670,692	0B09701A	RK 10K 1/6W J
R605,611 612,653 657,662 672	0B09725A	RK 100K 1/6W J
R606,622	0B09707A	RK 18K 1/6W J
R607,626	0B09695A	RK 5.6K 1/6W J
R608	0B09217A	RF 5.6 1/4W J
R609	0B09824A	R-Network 100Kx3
R610	0B05509A	RK 33K 1/4W J

Schematic Ref. No.	Part No.	Description
R613,614	0B09677A	RK 1K 1/6W J
631,632		
652,666		
690		
R615,616	0B09741A	RK 470K 1/6W J
633,634		
R617,618	0B01679A	RK 100 1/4W J
R619	0B05836A	RK 2.7 1/4W J
R620	0B06706A	R Coil 3.5
R621	0B09831A	RF 22 1W J
R623	0B09715A	RK 39K 1/6W J
R624	0B09699A	RK 8.2K 1/6W J
R625	0B09711A	RK 27K 1/6W J
R627,638	0B09671A	RK 560 1/6W J
R628	0B09663A	RK 270 1/6W J
R629,691	0B09729A	RK 150K 1/6W J
R630,645	0B09717A	RK 47K 1/6W J
R635,636	0B01933A	RK 220 1/4W J
R637	0B24023A	R Fuse 1
R639	0B09681A	RK 1.5K 1/6W J
R649	0B09689A	RK 3.3K 1/6W J
R654,669	0B09749A	RK 1M 1/6W J
R655	0B22456A	RM 97.6K 1/6W F
R658	0B09733A	RK 220K 1/6W J
R659	0B09735A	RK 270K 1/6W J
R661	0B09687A	RK 2.7K 1/6W J
R663,664	0B09737A	RK 330K 1/6W J
667,668		
R671	0B09803A	R-Network 47Kx5
R673	0B09705A	RK 15K 1/6W J
R674	0B09697A	RK 6.8K 1/6W J
R693	0B09216A	RF 10 1/4W J
C601,611	0B01405A	CE 1μ 50V
615		
C602	0B40011A	CE 33μ 16V
C603	0B40024A	CE 0.33μ 50V
C604	0B40079A	CE 220μ 16V
C605	0B01802A	CM 2200P 50V J
C606,613	0B09290A	CC 0.01μ 50V Z
C607	0B09817A	CE 33μ 10V (KS)
C608	0B09150A	CE 33μ 25V (LN)
C609,610	0B09292A	CC 0.1μ 50V Z
C612	0B40178A	CE 0.47μ 50V
C614	0B09332A	CE 2.2μ 50V (LN)
C616	0B09148A	CE 10μ 25V (LN)
C617,618	0B09286A	CC 470P 50V K
CN4	0B02245A	9P-T Post
CN5	0B02243A	5P-T Post
CN6	0B08185A	3P-T Post
CN7	0B08653A	3P-T Post
FC7/9	0B02350A	JP Connector 5P (1)
FC8	0B81163A	Wire Trap 2P (1)
FC10/11	0B02352A	JP Connector 7P (1)
FC12/13	0B02354A	JP Connector 9P (1)
	0B90134A	Heat Sink BX
	— DC Power Supply —	
IC401	0B06216A	IC μPC4556C
Q401,403	0B01872A	TR 2SC945L (P,Q)
407		
Q402,404	0B06013A	TR 2SA733 (P,Q)
Q408	0B06255A	TR 2SD880 (Y)
Q409	0B06322A	TR 2SC2002 (K,L)
ZD401	0B12147A	ZD 5.1V RD5.1JS-T1B2
ZD402	0B12153A	ZD 6.2V RD6.2JS-T1B2
ZD403	0B12104A	ZD 15V RD15EB3
D401	0B06282A	Diode Bridge DBA10
D402,403	0B06109A	SiD GP08B
R401	0B22357A	RM 13.7K 1/6W F
R402	0B09203A	RM 10K 1/4W F
R403,404	0B22347A	RM 11K 1/6W F
R405,406	0B09695A	RK 5.6K 1/6W J
R407	0B09681A	RK 1.5K 1/6W J
R408,409	0B09749A	RK 1M 1/6W J
R410,411	0B09701A	RK 10K 1/6W J
R412,413	0B09693A	RK 4.7K 1/6W J
R414,415	0B09677A	RK 1K 1/6W J
R417	0B01857A	RK 1K 1/4W J
R418	0B09665A	RK 330 1/6W J
R419	0B01933A	RK 220 1/4W J
C401	0B40197A	CE 4700μ 25V
C402	0B40094A	CE 470μ 25V
C403	0B40196A	CE 10000μ 16V
C404	0B40180A	CE 2200μ 16V
C405,406	0B09393A	CC 68P 50V J
C407,408	0B05652A	CM 4700P 50V J

Schematic Ref. No.	Part No.	Description
C409	0B09798A	CE 6800μ 16V
C410	0B40079A	CE 220μ 16V
C411,412	0B01272A	CE 100μ 25V
	— Miscellaneous —	
	0B60133A	Main P.C.B.
FC5,6,	0B81002A	Dip Mate 2P (8)
ME1,2,3,4		
10,11		
MS6/7	0B81011A	Dip Mate 4P (3)
MM15/16		
EM17/18		
FC21	0B02349A	JP Connector 4P (1)
B601	0B02350A	JP Connector 5P (1)
	0B08584A	8P DIN Socket (1)
	0B82402A	SCN-S Connector 8P 150mm (1)
	0B02348A	JP Connector 3P (1)
	0B81010A	Dip Mate 3P (13)
	BA05517A-E	**Main P.C.B. Ass'y (220V Class 2)**
		Contents is the same as for U.S.A., Canada, Australia and Others versions except for the following section.
	— Rec. Cal. —	
IC306	0B11027A	IC TC9145P
Q116,216	0B01872A	TR 2SC945L (P,Q)
D112,212	0B06398A	SiD 1SS176
VR102,103	0B32008A	Semi-fixed VR 10K
202,203		
VR104,204	0B32009A	Semi-fixed VR 22K
R172,272	0B09705A	RK 15K 1/6W J
R173,273	0B09703A	RK 12K 1/6W J
R174,274	0B22326A	RM 6.98K 1/6W F
R175,275	0B09749A	RK 1M 1/6W J
R176,276	0B09709A	RK 22K 1/6W J
R177,277	0B09699A	RK 8.2K 1/6W J
R178,278	0B09711A	RK 27K 1/6W J
R179,279	0B09693A	RK 4.7K 1/6W J
R180,280	0B09697A	RK 6.8K 1/6W J
R182,282	0B09689A	RK 3.3K 1/6W J
R184,186	0B09701A	RK 10K 1/6W J
284,286		
R187,287	0B09713A	RK 33K 1/6W J
717,817		
R716,816	0B09685A	RK 2.2K 1/6W J
C147,247	0B09270A	CP 470P 100V J
C150,250	0B05681A	CM 0.01μ 50V J
C152,252	0B05659A	CM 5600P 50V J
C155,255	0B05843A	CM 0.012μ 50V J
712,812		
C156,256	0B41096A	CM 0.015μ 50V J

4. Wiring Diagram

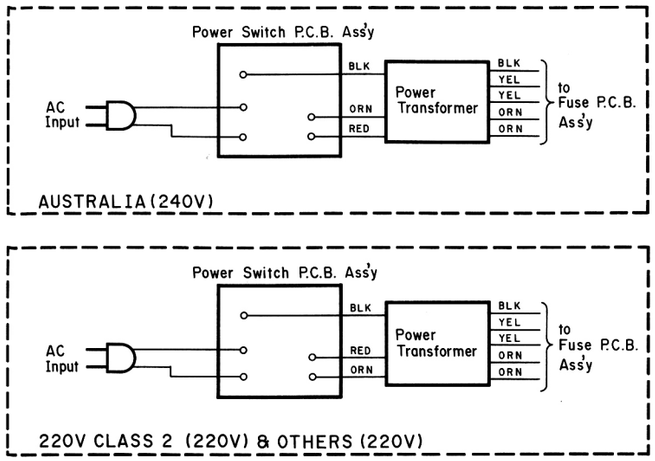

Fig. 1

Notes: 1. Table of wire colors

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

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

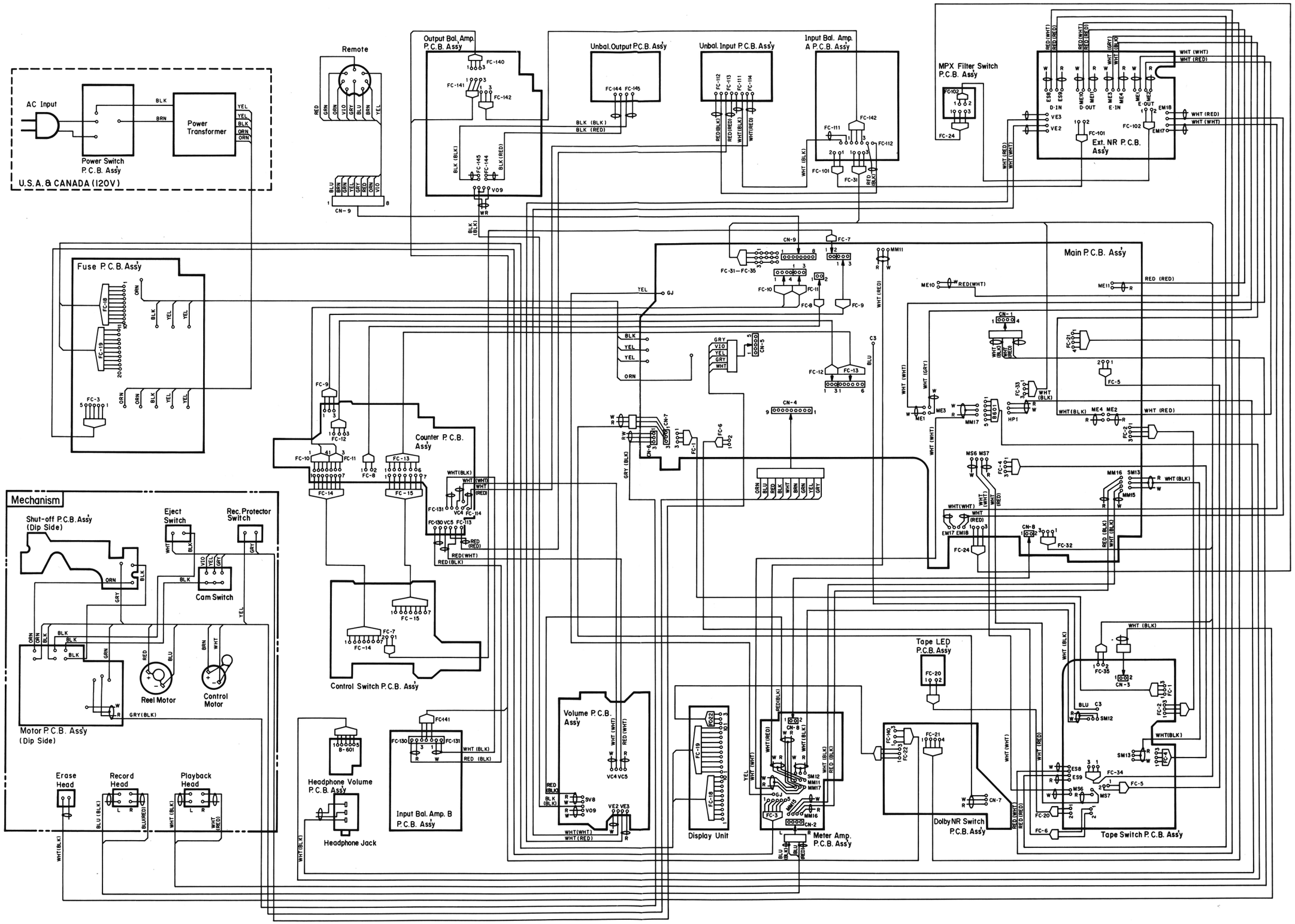

Fig. 2

Notes: 1. Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.
2. The word "DOLBY" and the Double-D-symbol are trademarks of Dolby Laboratories Licensing Corporation.

Service Information

Nakamichi

Model: BX-100, BX-125, BX-150, BX-1, BX-2, MR-2, RX-202/CR-7, CR-5, BX-300, MR-1

Serial No.: from -

Subject: How to Change Take-up/Supply Reel Hub Ass'y and Reel Motor Ass'y from Pulley Type to Gear Type

No. OOD-SI-3117 (1/5)

Date 27 January 1989

1. Introduction

This Service Information is prepared to inform you of the way how to change the Take-up Reel Hub Ass'y, Supply Reel Hub Ass'y and Reel Motor Ass'y from current pulley type to gear type.

This change applies to the following models:

- o 2 Head Cassette Decks (See 2.1.)
  BX-100, BX-125, BX-150, BX-1, BX-2, MR-2, RX-202
- o 3 Head Cassette Decks (See 2.2.)
  CR-7, CR-5, BX-300, MR-1

2. Replacement Procedures

2.1. For 2 Head Cassette Decks

2.1.1. Parts Required

Ref. No.	Current Part No.	New Part No.	New Description	Q'ty
12 (14)	CA80003B	CA80725A	Take-up Reel Hub Ass'y	1
13 (15)	CA80004B	CA80726A	Supply Reel Hub Ass'y	1
41 (38)	0C80030A	0C82722A	Reel Motor Holder B	1
42 (39)	CA80008B	CA80728A	Reel Motor Ass'y	1
L07 (L08)	0E03049A	0E03049A	Washer 1.8x3.2x0.5	2
L08 (L09)	0E03050A	0E03226A	Washer 2.1x4.5x0.1	2
	-	0C80613A	Reel Hub Spring	2
	-	0C80612A	Spring Holder	2

( ): for RX-202 Only.

2.1.2. Replacement Procedures

Refer to Fig. 1. (Although Fig. 1 shows the exploded view of the BX-125's Mechanism Ass'y, parts to be replaced are common to all models.)

(1) Remove the Top Cover, Bottom Cover and Cassette Case Cover Ass'y.
(2) Remove the Mechanism Ass'y.
(3) Remove the Cover Plate from the Mechanism Ass'y.
(4) Change the Reel Motor Ass'y, Take-up Reel Hub Ass'y and Supply Reel Hub Ass'y from the current pulley type to gear type.
  (a) Remove L07 (2 pcs.) and pull out the Take-up Reel Hub Ass'y (12) and Supply Reel Hub Ass'y (13).
  (b) Remove L08 (2 pcs.) and the Back Tension Springs (40; 2 pcs.).
  (c) Unsolder the signal wires (RED ⊕ and BLK ⊖) of the Reel Motor Ass'y (42).
  (d) Loosen L06 (3 pcs.) and remove the Reel Motor Holder (41) from the Mechanism Ass'y.
  (e) Loosen L18 (2 pcs.), remove the Reel Motor Ass'y (42), and replace with a new gear type Reel Motor Ass'y.
  (f) Install a new Reel Motor Holder (41) on the Mechanism Ass'y.
  Note: Make sure that the Cassette Hold Spring (31) is in place, as it falls easily.
  (g) Solder the signal wires (RED ⊕ and BLK ⊖) to the new Reel Motor Ass'y (42).
  (h) Install the Back Tension Springs (40; 2 pcs.).
  (i) Install Reel Hub Springs (2 pcs.), Spring Holders (2 pcs.) and Washers 2.1x4.5x0.1 (2 pcs.) on the Reel Hub Shafts in that order.
  Note: When installing the Spring Holder, insert its pin into the hole in the Mechanism Chassis (32).
  (j) Install a new gear type Take-up Reel Hub Ass'y and Supply Reel Hub Ass'y, and then Washers 1.8x3.2x0.5 (2 pcs.).
  Note: Check that there is a play in the Reel Hub Ass'y.
(5) Install the Cover Plate on the Mechanism Ass'y.
(6) Install the Mechanism Ass'y on the Cassette Deck.
(7) Check for correct mechanical operations and make sure that the torque in Play mode is within 35 g-cm to 40 g-cm.
(8) Install the Cover Plate, Cassette Case Cover Ass'y, Bottom Cover, and Top Cover.

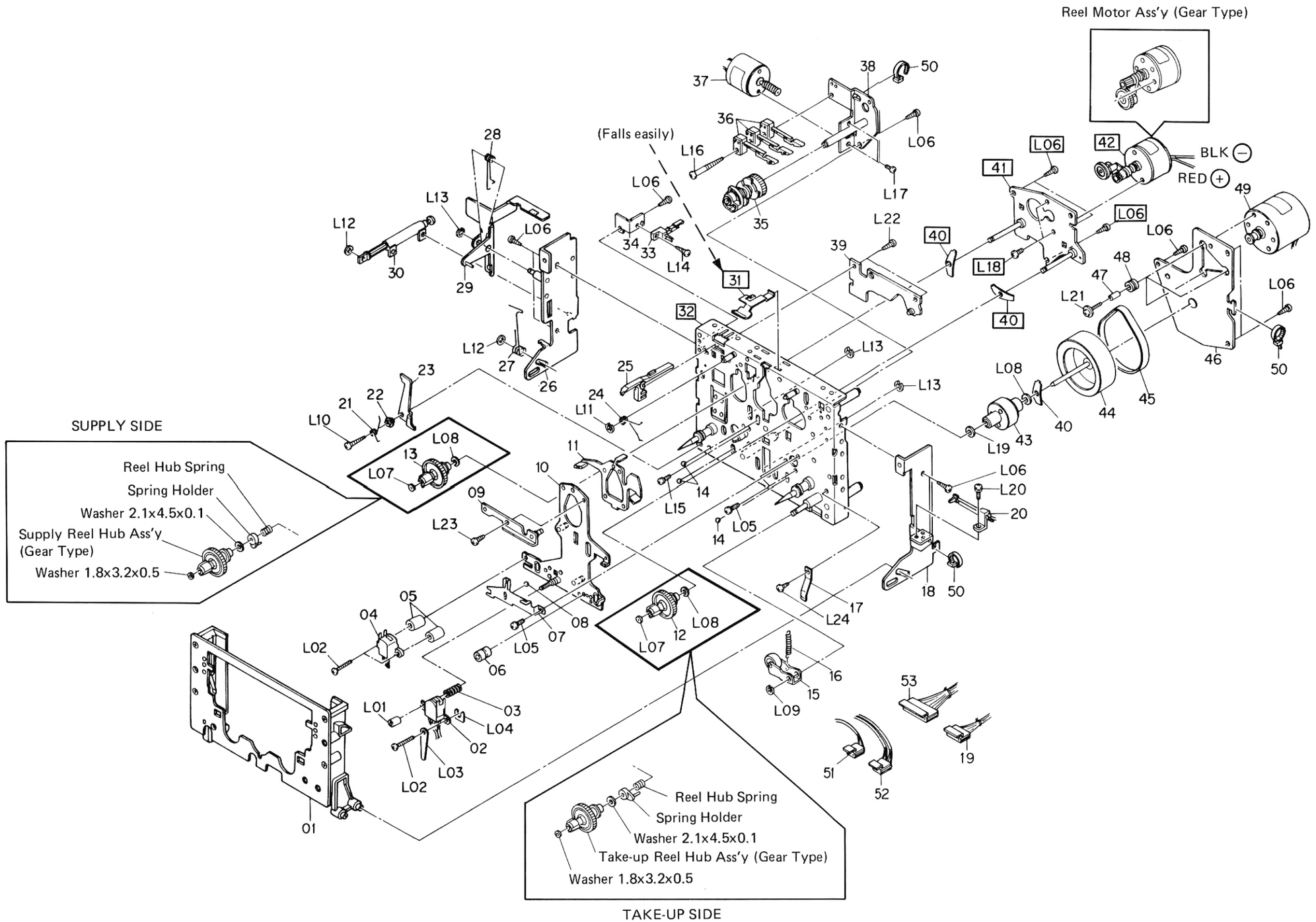

Fig. 1 2 Head Cassette Deck (In case of BX-125)

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2.2. For 3 Head Cassette Decks

2.2.1. Parts Required

(1) For CR-7

Ref. No.	Current Part No.	New Part No.	New Description	Q'ty
21	CA80201A	CA80725A	*Take-up Reel Hub Ass'y	2
72	CA80205A	CA80730A	Reel Motor Ass'y	1
L10	0E03049A	0E03049A	Washer 1.8x3.2x0.5	2

*: Take-up Reel Hub Ass'y is used for both take-up side and supply side.

(2) For CR-5/BX-300/MR-1

Current Part No.	New Part No.	New Description	Q'ty
CA80201A	CA80725A	Take-up Reel Hub Ass'y	1
CA80202A	CA80726A	Supply Reel Hub Ass'y	1
CA80205A	CA80730A	Reel Motor Ass'y	1
0E03049A	0E03049A	Washer 1.8x3.2x0.5	2

2. Replacement Procedures

Refer to Fig. 2. (Although Fig. 2 shows the exploded view of the CR-7's Mechanism Ass'y, parts to be replaced are common to all models.)

(1) Remove the Top Cover, Bottom Cover and Cassette Case Cover Ass'y.
(2) Remove the Mechanism Ass'y.
(3) Remove the Cover Plate from the Mechanism Ass'y.
(4) Change the Reel Motor Ass'y, Take-up Reel Hub Ass'y and Supply Reel Hub Ass'y from the current pulley type to gear type.
  (a) Disengage the Back Tension Belt (13) from the Supply Reel Hub Ass'y (21).
  (b) Remove L10 (2 pcs.), and pull out the Take-up Reel Hub Ass'y (21) and Supply Reel Hub Ass'y (21).
  (c) On the take-up side, remove the Washer L08, Spring Holder (22) and Take-up Reel Hub Spring (51).
    Note: Keep these take-up side parts as one set.
  (d) On the supply side, remove the Washer L08, Spring Holder (22) and Supply Reel Hub Spring (23).
    Note: Keep these supply side parts as one set. Distinguish this set from the take-up side one.
  (e) Loosen the Screw (43), unhook L15, and remove the Azimuth Alignment Plate (45). (For CR-7 only)
  (f) Unsolder two signal wires (RED ⊕ and BLK ⊖) of the Reel Motor Ass'y (72).
  (g) Unsolder two signal wires (BLK from the Eject Switch and BLK from the Cam Switch) of the D.D. Motor P.C.B. Ass'y.
  (h) Remove the D.D. Motor Ass'y (73) as follows:
    Note: Use a smaller philips screwdriver.
    1) Open the Cassette Case Ass'y (24) and loosen the upper side Screws L01-1 (2 pcs.)
    2) Push the Head Mount Plate (28) to slide it, and loosen the lower side Screws L01-1 (2 pcs.)
      Note: The Screw L01 on the bottom left is under the Lock Lever (16). So, when loosening it, pay attention so as not to bend the Lock Lever (16).
    3) Remove the D.D. Motor Ass'y (73) gently from the Mechanism Chassis (62) so as not to give damages to the capstan shafts.
  (i) Loosen L01-2 (2 pcs.) and nut L32, and remove the Reel Motor Holder (70).

Note: Remember the original positions of the nut L30 on the Brake Ass'y (66) and the Cassette Hold Spring (63), as they come off when removing the Reel Motor Holder (70).

(j) Loosen L31 (2 pcs.), remove the current Reel Motor Ass'y (72), and replace with a new gear type Reel Motor Ass'y.

(k) Install the new gear type Reel Motor Ass'y on the Reel Motor Holder (70), and the Reel Motor Holder (70) on the Mechanism Chassis (62).

Note: Before installing the Reel Motor Holder (70), put the nut L30 and Cassette Hold Spring (63) in place. Then slide the Brake Ass'y (66) with your finger to check for smooth movement. If not, re-check the positions of the nut L30 and Cassette Hold Spring (63).

(l) Install the D.D. Motor Ass'y (73) by fastening L01-1 (4 pcs.).

Note: Carefully install the D.D. Motor Ass'y (73) as the D.D. Motor P.C.B. Ass'y can be damaged.

(m) Solder two signal wires (RED ⊕ and BLK ⊖) to the new Reel Motor Ass'y and two signal wires (BLK) to the D.D. Motor P.C.B. Ass'y.

(n) Install the Take-up Reel Hub Ass'y as follows:

1) Use the take-up side parts removed in (c). Install the Take-up Reel Hub Spring (51), Spring Holder (22) and Washer L08 on the Take-up Reel Hub Shaft in that order.

Note: When installing the Spring Holder (22), insert its pin into the hole in the Mechanism Chassis (62).

2) Install a new gear type Take-up Reel Hub Ass'y and a Washer 1.8x3.2x0.5.

Note: Check that there is a play in the Take-up Reel Hub Ass'y.

(o) Install the Supply Reel Hub Ass'y as follows:

1) Use the supply side parts removed in (d). Install the Supply Reel Hub Spring (23), Spring Holder (22) and Washer L08 on the Supply Reel Hub Shaft in that order.

Note: When installing the Spring Holder (22), insert its pin into the hole in the Mechanism Chassis (62).

2) Install a new gear type Supply Reel Hub Ass'y and a Washer 1.8x3.2x0.5.

Note: Check that there is a play in the Supply Reel Hub Ass'y.

(p) Engage the Back Tension Belt (13) with the Supply Reel Hub Ass'y (21).

(q) Install the Azimuth Alignment Plate (45). (CR-7 only)

(5) Install the Mechanism Ass'y on the Cassette Deck.

(6) Check for correct mechanical operations and make sure that the torque in Play mode is within 35 g-cm to 40 g-cm.

(7) Install the Cover Plate, Cassette Case Cover Ass'y, Bottom Cover, and Top Cover.

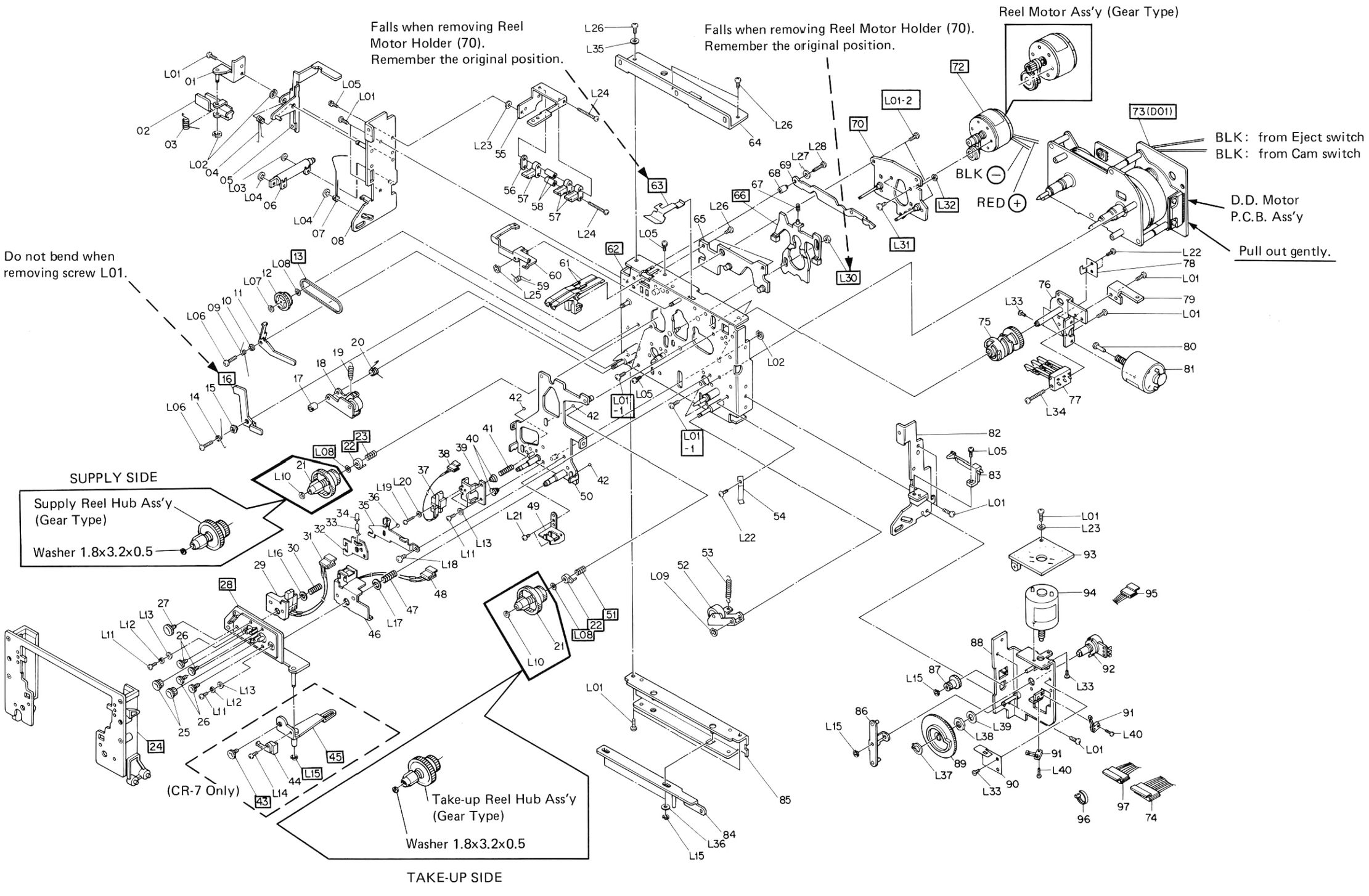

Fig. 2 3 Head Cassette Deck (In case of CR-7)

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Service Manual

Nakamichi **MR-1**

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