

1. GENERAL

1.1. Voltage Selector

Voltage selector is installed on the rear panel for Other version of the Nakamichi ZX-9. This voltage selector can select either 120 V or 220-240 V at customer's disposal.

1.2. Parts List for Carton and Packing

Part No.	Description	Q'ty
0F03671A	Inner Carton	1
0F03672A	Outer Carton	1
0F03629A	Packing	2

2. MECHANICAL ADJUSTMENTS

2.1. Mechanism Control Cam Adjustment

Before adjustment, remove the Front Panel Ass'y and the Cover Plate.

(1) Offset Adjustment of Control Motor Driver

(a) Refer to Fig. 2.1.

Adjust VR602 and VR603 on the Logic & Power P.C.B. Ass'y to locate approximately at the middle of the variable range. Then turn ON the Power switch.

VR602 (for Cam position stop)

VR603 (for Cam position play)

- (b) Press the Stop button to set the cassette deck in Stop mode. Adjust VR602 (for stop) so that the "S" mark on the Cam corresponds to the pointer on the mechanism chassis.
- (c) Press the Play button to set the cassette deck in Playback mode. (Cam will rotate, and the position marked with "PY" comes to the pointer.) Adjust VR603 (for play) so that the "PY" mark on the Cam corresponds to the pointer.
- (d) Repeat above (b) and (c) 2 - 3 times so that the "S" and "PY" marks on the Cam correspond to the pointer accurately in Stop and Playback modes respectively. (This adjustment is required because the position adjusted by one volume will be slightly changed when the other volume is adjusted.)
- (e) Set the cassette deck in F.F., Pause, or Cue mode by pressing each button (press F.F. and Pause buttons to set the cassette deck in Cue mode) and check to insure that the pointer is in a range of "F", "PS", or "CU" mark respectively.
- (f) If out of the range, precise adjustment for each position according to "(2) Offset Fine Adjustment of Control Motor Driver" will be required.

(2) Offset Fine Adjustment of Control Motor Driver

Adjust only if a satisfactory result is not obtained in "(1) Offset Adjustment of Control Motor Driver". This adjustment is made by changing the value of the fixed resistors on the Logic & Power P.C.B. Ass'y.

Note: The value of voltage is typical value.

(a) Observation Point of Reference Voltage

Observe the each voltage at the sliding contact of the Cam Control Volume VR604 (10 k Ω) in Stop, Fast (F.F. or Rew.), Pause and Playback modes.

(b) Reference Voltage

Reference voltage at the sliding contact of VR604 (Cam Control Volume) in each mode is as follows:

Mode	Reference Voltage (Typical Value)
Stop	0 V
Fast (F.F./Rew.)	-2.0 V \pm 0.25 V
Pause	-6.5 V \pm 0.4 V
Play	-9.1 V

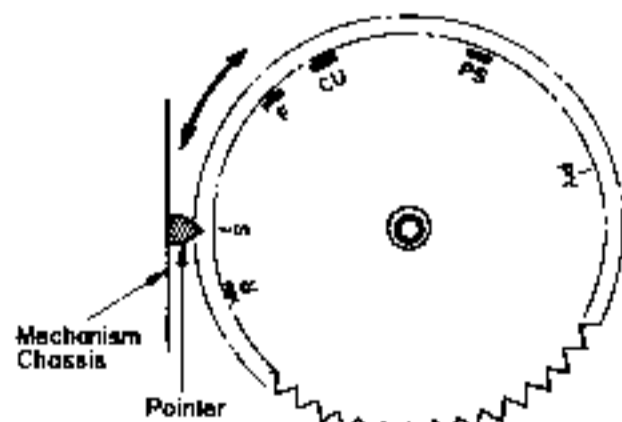


Fig. 2.1

(c) Resistors for Adjustment

Mode	Ref. No.	Typical Value
Fast (F.F./Rew)	R647	22 k Ω
Pause	R649	76.8 k Ω (F)
Play	R648	10 k Ω

(d) Adjustment Procedures

- Set the cassette deck in Stop mode, then check to insure that the voltage at the sliding contact of VR604 is 0 V (\pm 0.3 V).
- Set the cassette deck in F.F. mode, then adjust the value of R647 so that the voltage at the sliding contact of VR604 will become lower by 2.0 V (\pm 0.25 V) than in Stop mode.
- Press the Pause button to set the cassette deck in Pause mode. Adjust the value of R649 to obtain -6.5 V (\pm 0.4, -0.15 V) at the sliding contact of VR604.
- Set the cassette deck in Playback mode, then adjust the value of R648 so that the voltage at the sliding contact of VR604 will become lower by 2.6 V (\pm 0.4 V) than in Pause mode.

2.2. Reel Motor Speed Adjustment in Play Mode

- Connect a DC voltmeter to TP1 and GND on the Logic & Power P.C.B. Ass'y.
- Without loading a cassette tape, set the cassette deck in Play mode.
- Adjust VR601 on the Logic & Power P.C.B. Ass'y to obtain -4 V on the DC voltmeter.

2.3. Record Head and Playback Head Tilt Adjustment

Note: On items 2.3 - 2.9, refer to Fig. 2.2 flow chart. Refer to Figs. 2.3 and 2.4.

- Load a Tilt Check Gauge M-9039 (DA09039A) in the cassette deck.
- 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.
- Remove both of the Height Gears.
- 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 the direction of arrow marks, then return them to the original place to be in contact with record head and playback head surfaces after Play mode is securely locked.
- Check to insure freedom from contact between the Gauge and pad lifter.
- Beacon Playback Head "Lower" will light on when height adjustment screw (P) turned clockwise but Playback Head "Upper" when counterclockwise. Adjust so that both "Upper" and "Lower" will light on even when you move the slide knob to the direction of an arrow mark and then return it to the original place.
- Same procedures will apply to the Beacons Record Head "Upper" and "Lower", except for the height adjustment screw (R).
- 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, (3) through (7) will have to be repeated till satisfactory results are obtained.

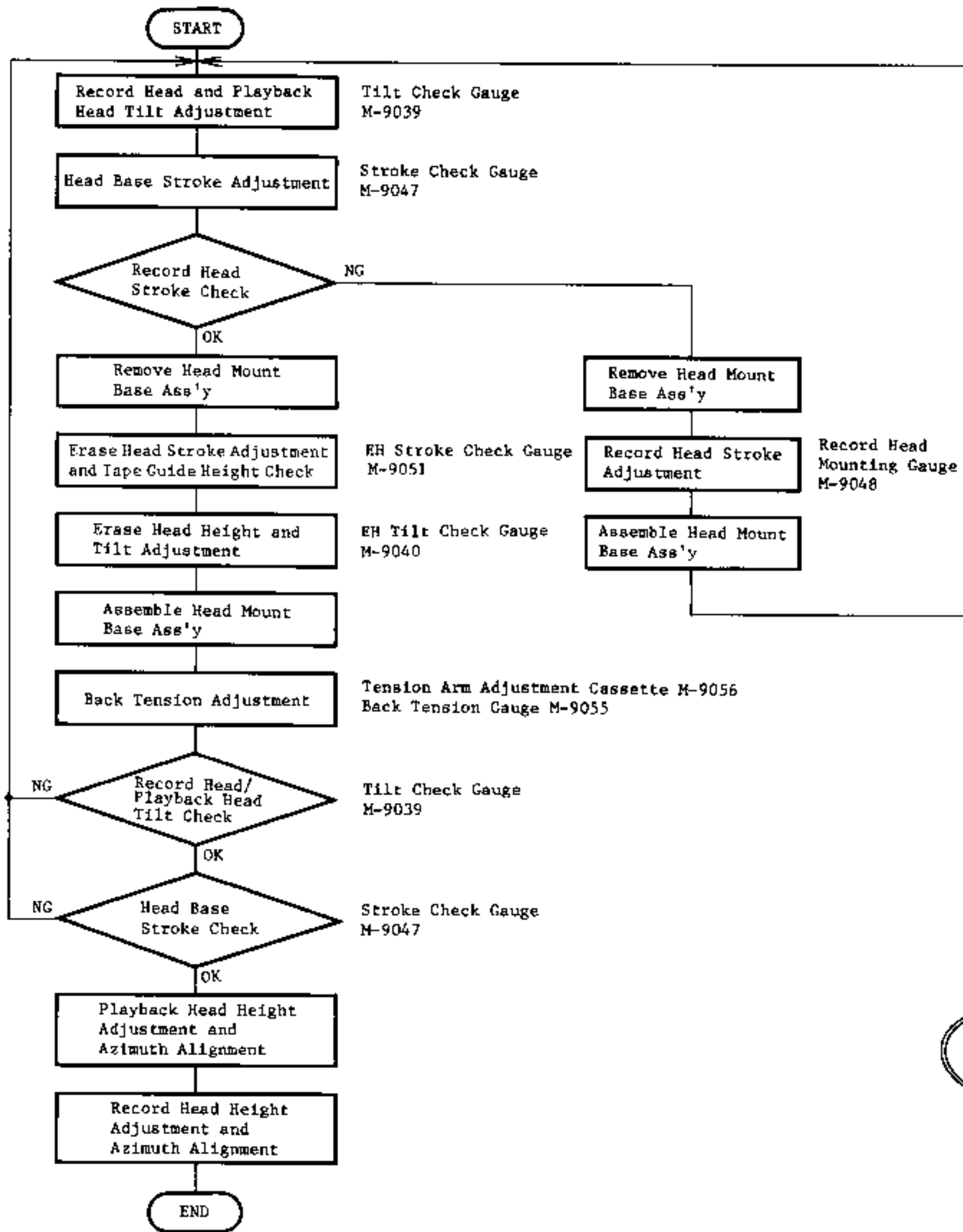


Fig. 2.2

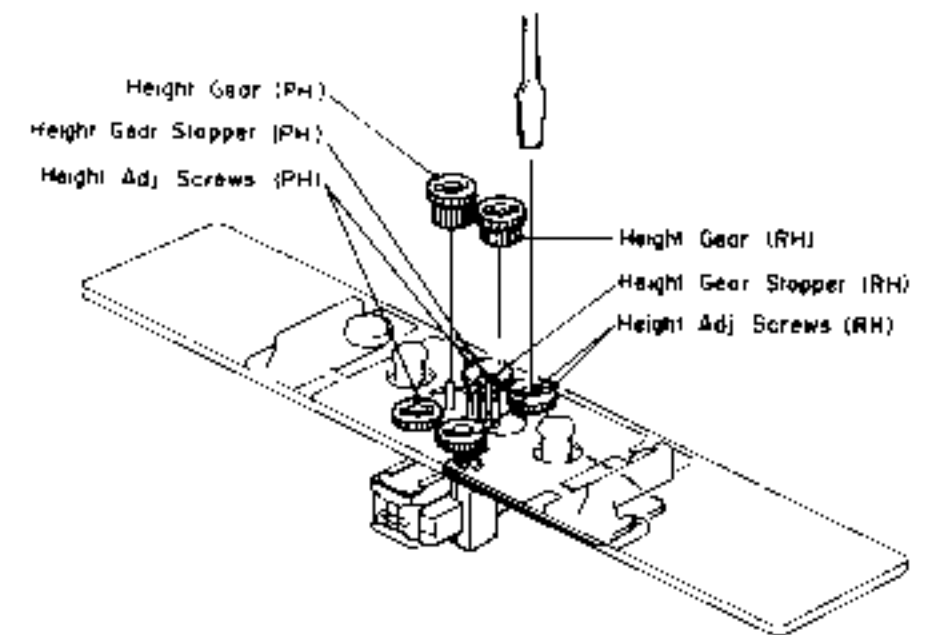


Fig. 2.3

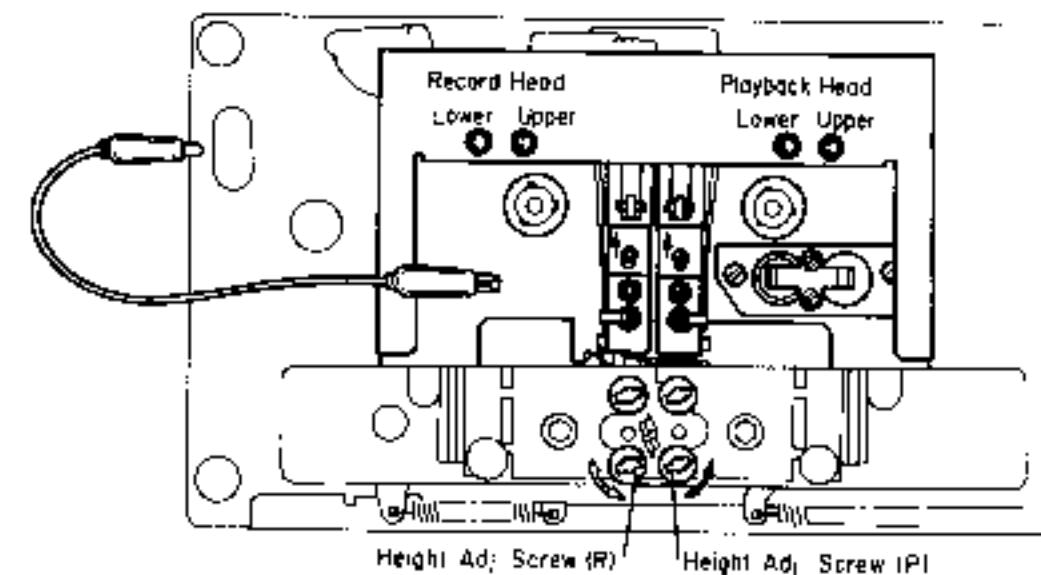


Fig. 2.4

2.4. Head Base Stroke Adjustment

Refer to Fig. 2.5.

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) Head Base Stroke Adjustment in Play Mode

- (a) Load a Stroke Check Gauge M-9047 (DA09047B) in the cassette deck.
- (b) 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.
- (c) Check to insure whether the "P" pointer on the Playback Head Indicator locates between the 2 lines on the Indicator Plate.
- (d) If the playback head stroke is noted to be misaligned, adjustment can be made by moving the stroke adjuster assembled in the head base assembly (either forwardly or backwardly).
- (e) Check to insure whether the "P" pointer on the Playback Head Indicator locates between the 2 lines on the Record Head Indicator, thus check can be made on record head stroke.

- (f) If the record head stroke is noted to be misaligned, adjustment can be made with a Record Head Mounting Gauge M-9048 (DA09048A).

(2) Head Base Stroke Adjustment in Cue Mode

- (a) Load a Stroke Check Gauge M-9047 (DA09047B) in the cassette deck.
- (b) 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 Cue (F.F. and Pause) mode. Then slowly release the Indicators and insure whether each of the Indicators is in contact with record and playback heads.
- (c) Check to insure whether the "C" pointer on the Playback Head Indicator locates between the 2 lines on the Indicator Plate.
- (d) If the playback head stroke is noted to be misaligned, adjust VR610 on the Logic & Power P.C.B. Ass'y till satisfactory results are obtained.
- (e) After completion of the Head Base Stroke Adjustment, check to insure accuracy of the Head Base Stroke Adjustment in Play mode. If the above are inaccurate, items (1) and (2) will have to be repeated till satisfactory results are obtained.

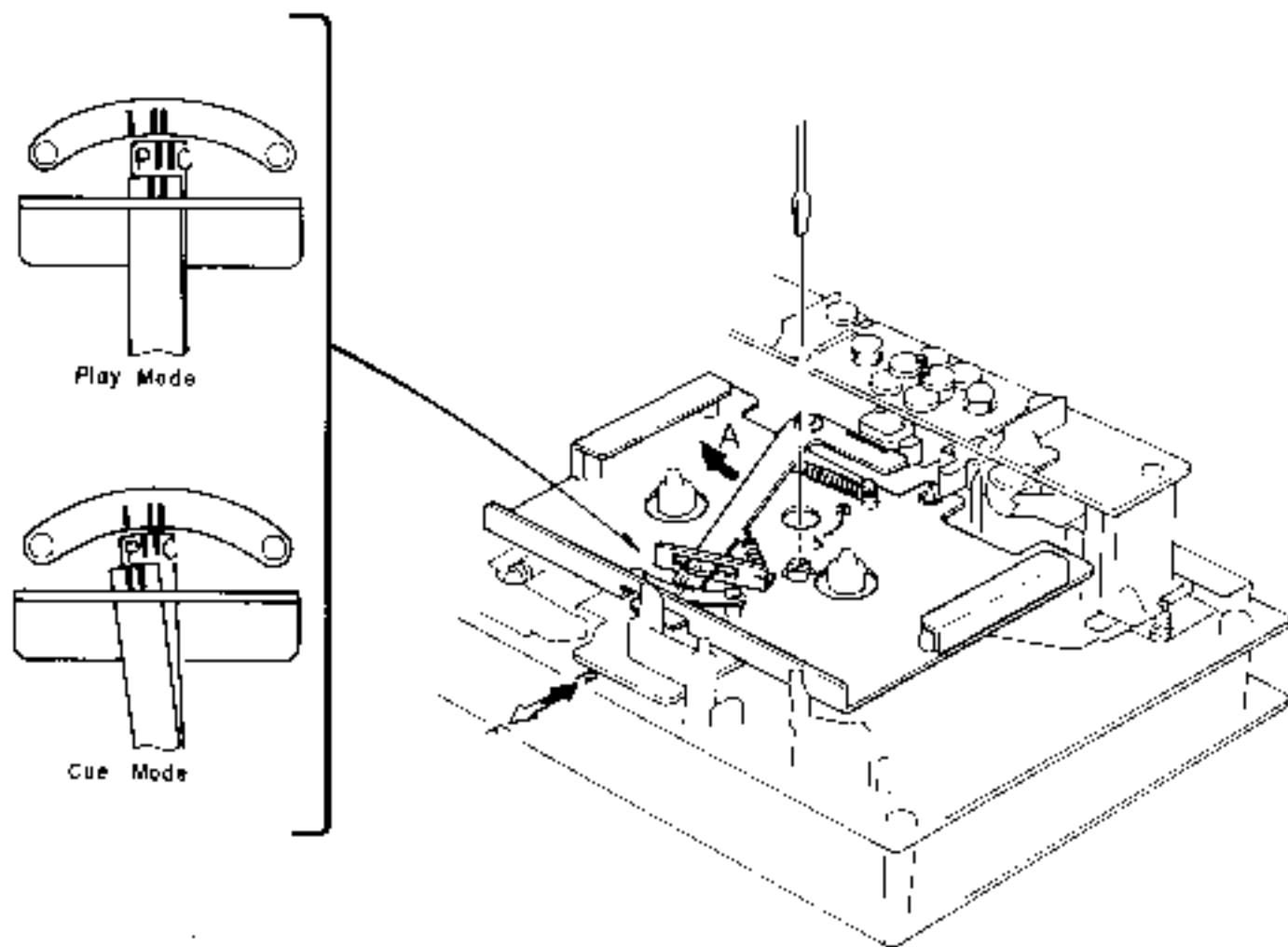


Fig. 2.5

2.5. Erase Head Stroke Adjustment and Tape Guide Height Check
Remove the Head Mount Base Ass'y.
Refer to Figs. 2.6 and 2.7.

- (1) Erase Head Stroke Adjustment
 - (a) Load an EH Stroke Check Gauge M-9051 (DA09051A) 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 2 screws A that assemble erase head and erase head plate.
 - (d) After completion of adjustment, 2 pcs. of screws shall be locked with lock tight paint.
- (2) Supply Tape Guide Height Check
 - (a) Load an EH Stroke Check Gauge M-9051 (DA09051A) 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 an EH Stroke Check Gauge M-9051 (DA09051A) in the cassette deck.
 - (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.

2.6. Erase Head Height and Tilt Adjustment

Refer to Figs. 2.8 and 2.9.

- (1) Remove Head Mount Base Ass'y.
- (2) Load an EH Tilt Check Gauge M-9040 (DA09040A) 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 as shown by an arrow mark 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 Beacon "1" is illuminating.
- (5) Turn Screw "Tilt" counterclockwise (or clockwise) to light on Beacon "2". Excessive turning will cause the Beacon "1" to light off. Adjustments of Screw "Tilt" will therefore be conducted till both of the Beacons "1" and "2" illuminate.
- (6) Turn Screw "Azimuth" counterclockwise (or clockwise) to light on Beacon "3". Excessive turning will cause either Beacon "1" or "2" to light off, and therefore adjust Screw "Azimuth" until all of the 3 Beacons "1", "2" and "3" 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.

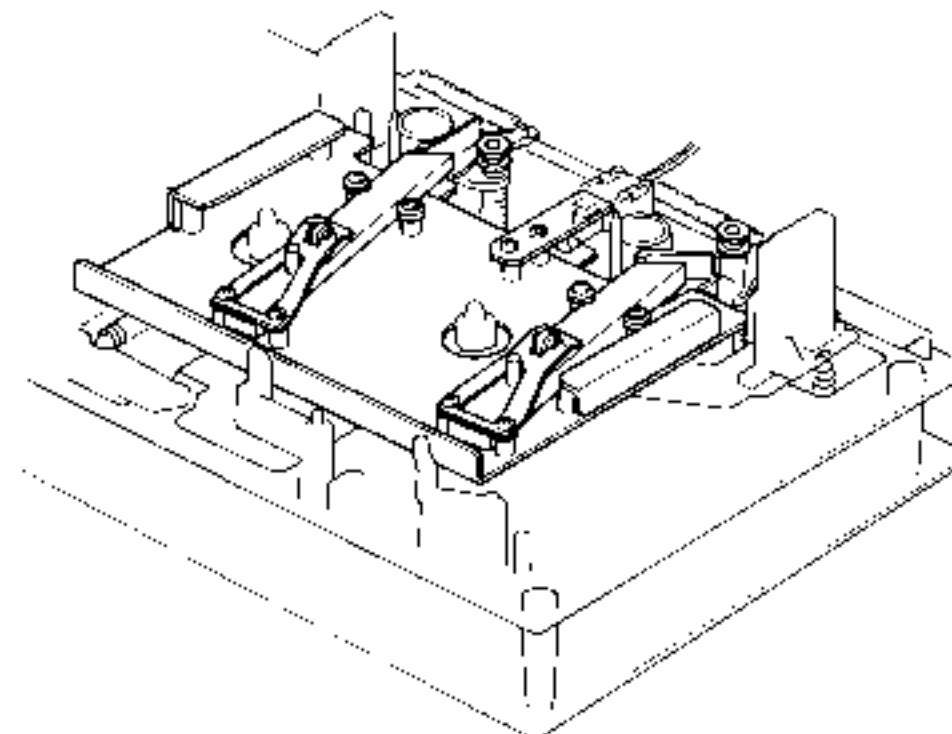


Fig. 2.6

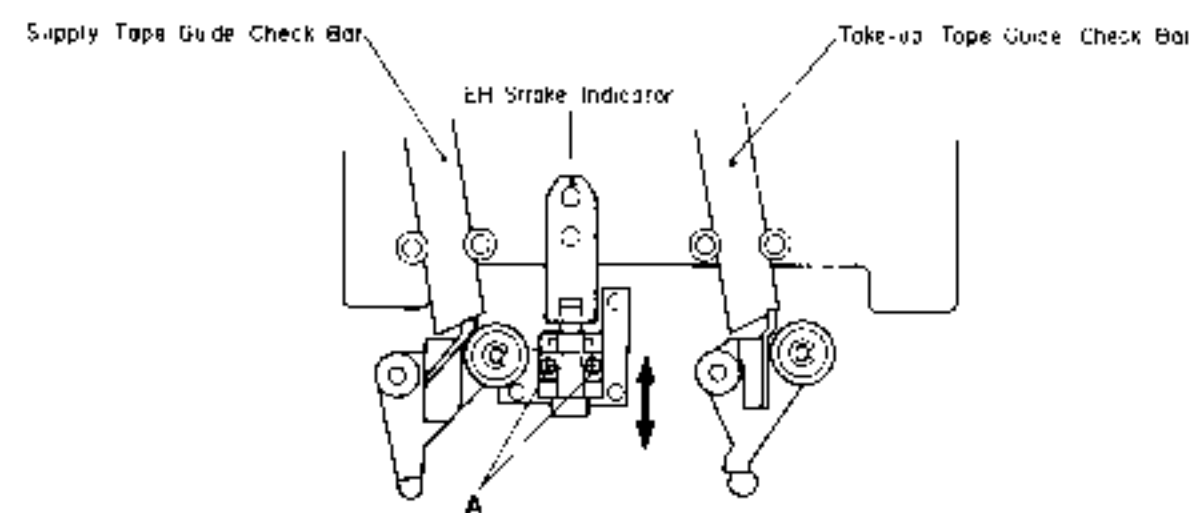


Fig. 2.7

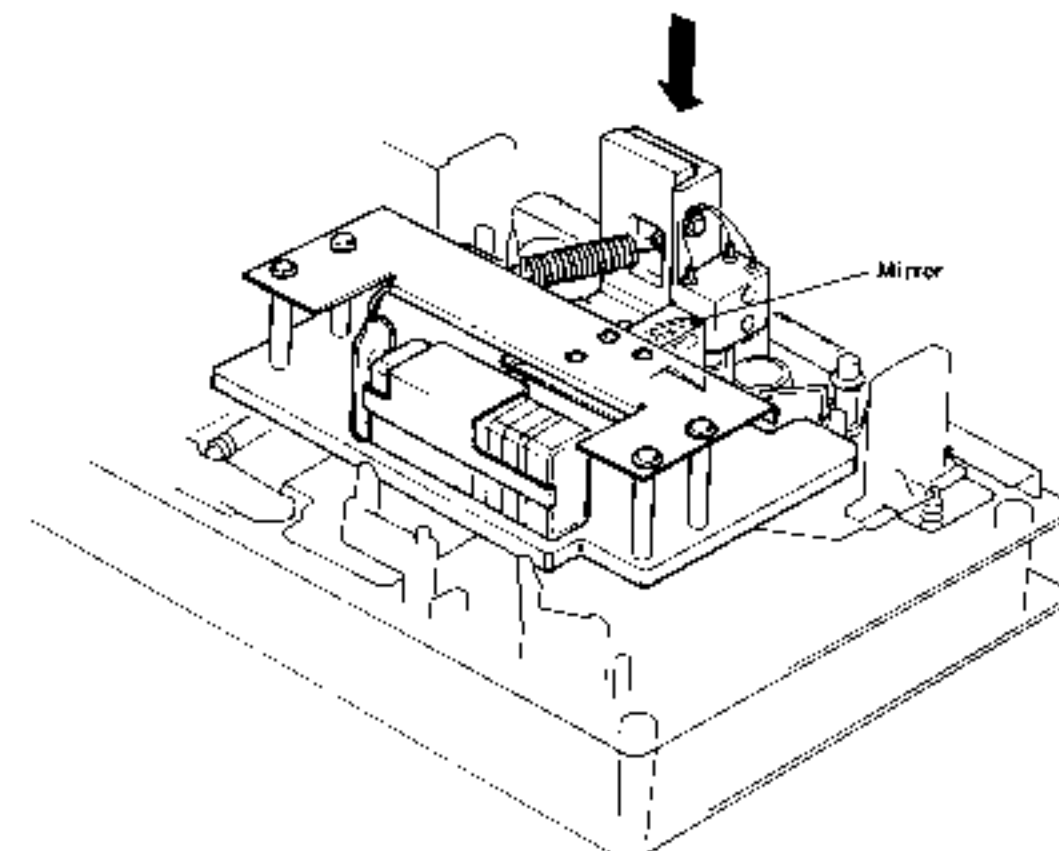


Fig. 2.8

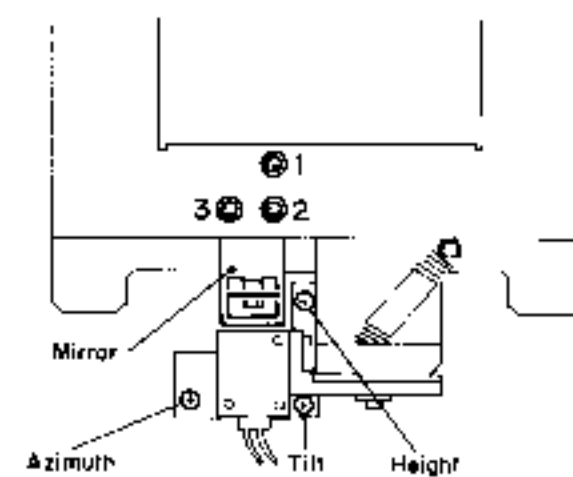


Fig. 2.9

2.7. Back Tension Adjustment

Refer to Figs. 2.10 — 2.13.

- (1) Load a Tension Arm Adjustment Cassette (DA09056A) in the cassette deck referring to Fig. 2.10.
- (2) Set the cassette deck in Play mode.
- (3) Bend the Back Tension Arm with pliers so that the gap between the Cassette Holding Spring assembled on the Head Base Ass'y and the Back Tension Arm becomes 0.5 mm as shown in Fig. 2.11. Do not bend the top of the Back Tension Arm.
- (4) Set the cassette deck in Stop mode, and remove the Tension Arm Adjustment Cassette (DA09056A), then set the cassette deck in Cue mode.

In Cue mode, check to insure that the gap is found between the Supply Reel Hub B Ass'y and the Felt of Back Tension Ass'y as shown in Fig. 2.12.

- (5) Load the Back Tension Gauge (DA09055A) in the cassette deck.
- (6) Set the cassette deck in Play mode and read the torque value of Back Tension Gauge.

If the value is in a range of 6 g-cm to 10 g-cm, adjustment is not necessary. If not, change the installation point of the Back Tension Spring as shown in Fig. 2.13, and obtain the torque of 7 g-cm to 9 g-cm range.

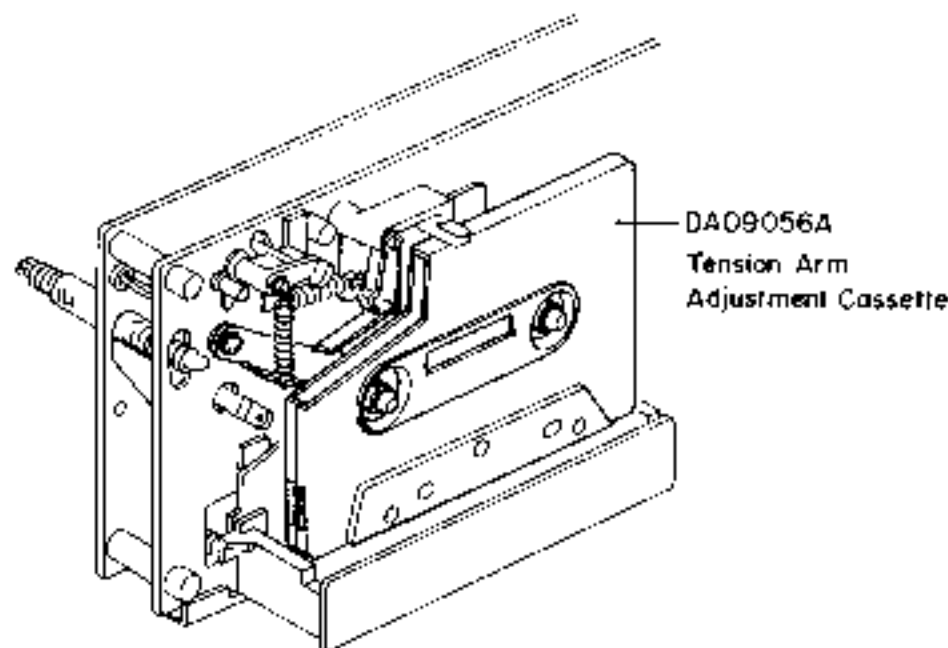


Fig. 2.10

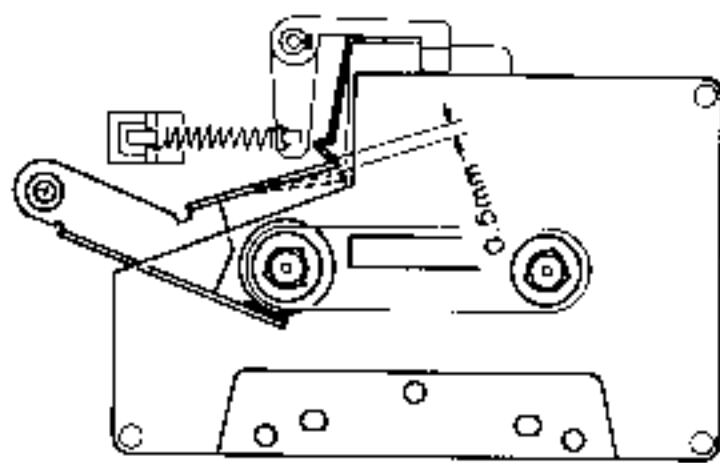


Fig. 2.11

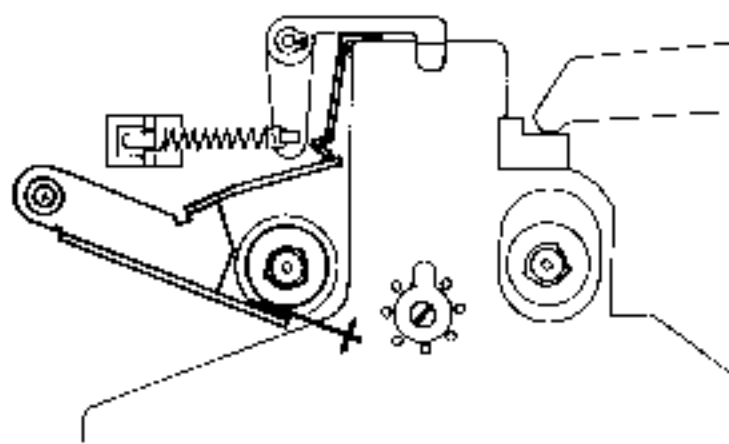


Fig. 2.12

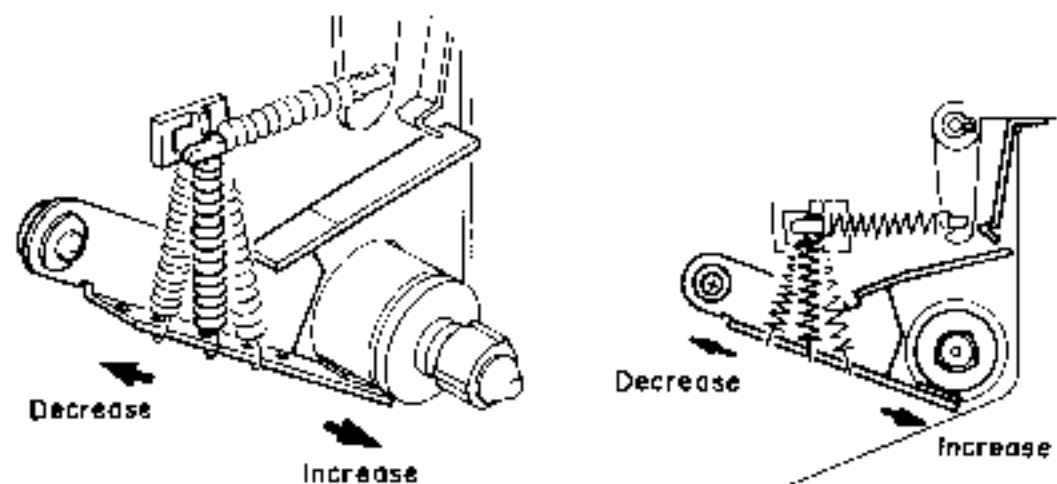


Fig. 2.13

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

(1) Playback Head Height Adjustment and Azimuth Alignment

Refer to Fig. 2.15.

- (a) Set the Monitor switch to Tape, then connect a VTVM to the Output Jacks.
- (b) Load a 1 kHz Track Alignment Tape (DA09007A), then 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 (DA09004A), then set the cassette deck in Play mode.
- (e) Turn the PH Azimuth Alignment Screw until the outputs of both channels become maximum.
- (f) Repeat above steps (b) through (e) one or two times to obtain optimum performance.

(2) Record Head Height Adjustment and Azimuth Alignment

Refer to Figs. 2.14 — 2.16.

- (a) Set the cassette deck in Stop mode.
- (b) Press the Azimuth Alignment Start button to ON.
- (c) Adjust the Azimuth Alignment Knob so that the Slide Lever of the Azimuth Alignment Wire is located at the center of the slit of the Azimuth Alignment Wire as shown in Fig. 2.14.
- (d) Press the Azimuth Alignment Start button to OFF.
- (e) Set the Monitor switch to Tape, Eq. switch to 70 μ s and Tape Selector button to SX.
- (f) Load a reference SX tape (DA09025A) and connect a VTVM to Output Jacks.
- (g) Press the Record and Play buttons, then press the Level Calibration Start button to oscillate 400 Hz. Turn the RH Height Gear until the outputs of both channels become maximum.
- (h) Press the Bias Calibration Start button to oscillate 15 kHz, then turn the RH Azimuth Alignment Screw until the outputs of both channels become maximum.
- (i) Repeat (g) and (h) one or two times to obtain optimum performance.
- (j) Press the Record and Play buttons, then press the Azimuth Alignment Start button to ON. Adjust VR304 on the Main P.C.B. Ass'y so that the red indicator in the middle of the Azimuth Indicator is lit up. Note: Use the same side of the tape as used in the above steps.
- (k) After completion of the above adjustment, press the Record and Play buttons, then press the Level Calibration Start button to oscillate 400 Hz. Record 400 Hz tone to the same portion of both sides A and B of the tape.
- (l) Immerse the recorded tape in a magnetized developing solution. In turn, check to insure that the recording head tracks across the center are separated with a distance of 0.55 to 0.75 mm (typically 0.65 mm) as illustrated in Fig. 2.16. Note: Liquid for tape magnetized development solution "MAGNA-SEE SOUND CRAFT a product of CBS RECORDS a division of Columbia Broadcasting System, Inc., Danbury, Conn. 06810 U.S.A., or equivalent". After development, clean the tape otherwise pressure rollers and heads will become dirty.

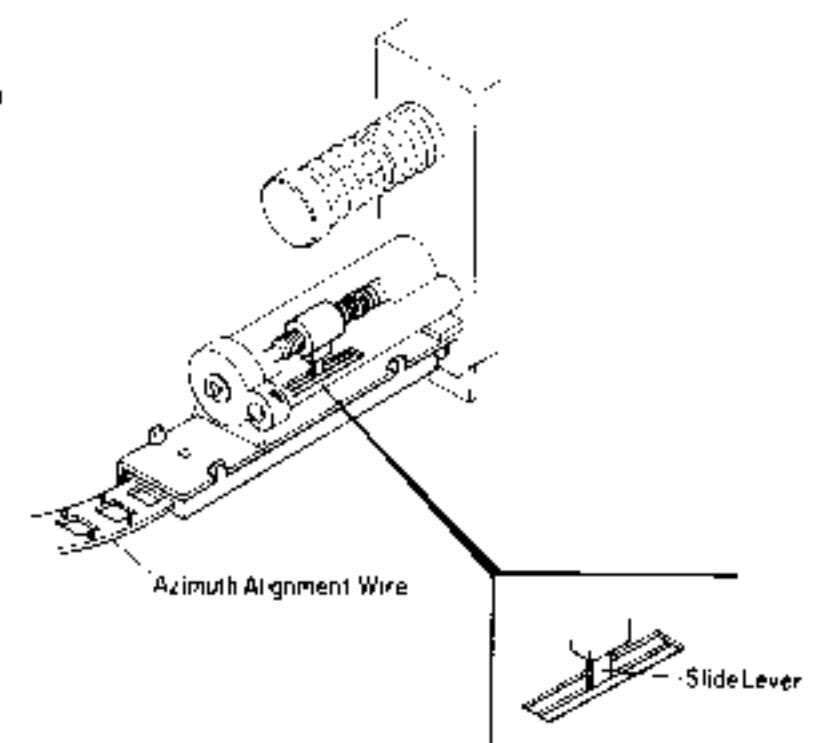
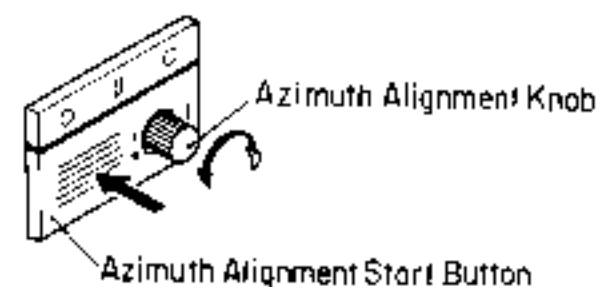


Fig. 2.14

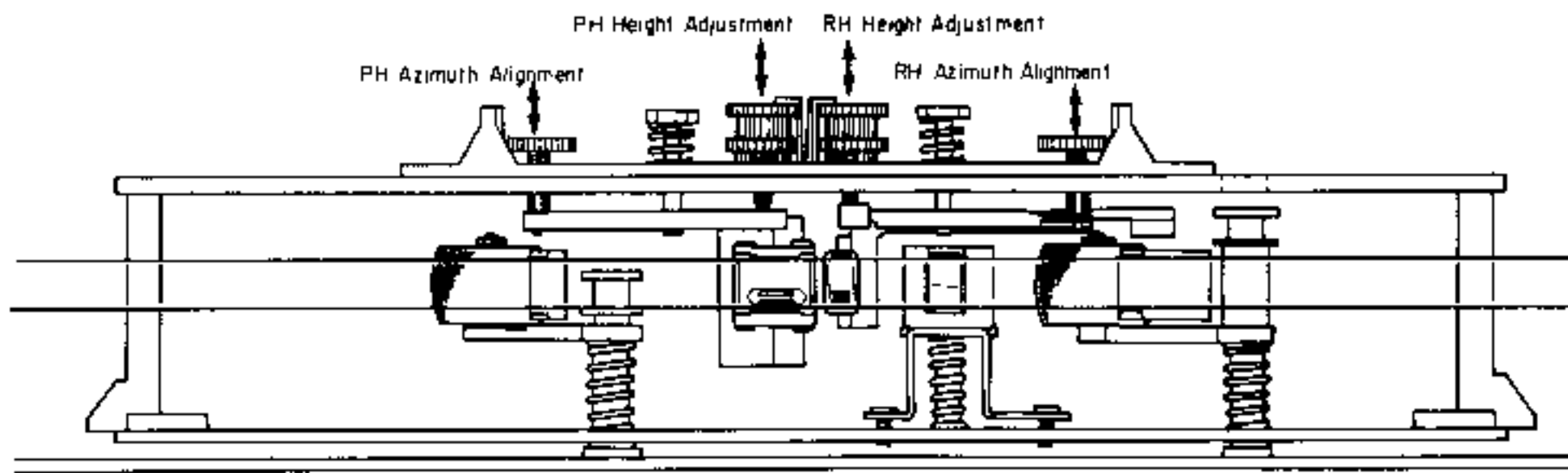


Fig. 2.15

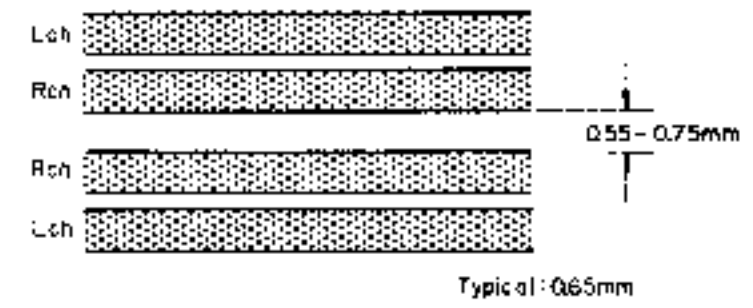


Fig. 2.16

2.9. Record Head Stroke Adjustment

Refer to Figs. 2.17 and 2.18.

Note: This adjustment will be required only to insure freedom from misalignment of the record head stroke in the record head stroke check mode.

- (1) Check the accuracy of the record head stroke.
- (2) Remove Head Mount Base Ass'y.
- (3) Remove the record head assembly.
- (4) Adjustment of Record Head Mounting Gauge M-9048 (DA0-9048A)
 - (a) Mount the Block B onto the Mounting Gauge Plate.
 - (b) Loosen the 2 screws fixing the Block A.
 - (c) As shown in Fig. 2.17, hold the Gauges (3.05 mm and 0.1 mm thickness) between the Block A and Block B, and fix the Block A with screws, pushing the Block A to the 2 guide pins.
- (5) Remove the Block B from the Mounting Gauge Plate.
- (6) As shown in Fig. 2.18, mount the R-8L record head assembly onto the Mounting Gauge Plate, then check the location of the R-8L record head surface. (If record head touches the Block C, loosen 2 pcs. of screws that assemble record head and record head plate, then place the R-8L record head assembly onto the Plate.)
- (7) Remove the R-8L record head assembly from the Mounting Gauge Plate.
- (8) Readjustment of Record Head Mounting Gauge M-9048 (DA09048A)
 - (a) Mount the Block B onto the Mounting Gauge Plate.
 - (b) Loosen the 2 screws fixing the Block A.
 - (c) As shown in Fig. 2.17, hold the Gauges (3.05 mm and either one of 0.05, 0.15, 0.2, 0.25, 0.3 or 0.35 mm thickness) between the Block A and Block B, and fix the Block A with screws, pushing the Block A to the 2 guide pins.
- (9) Remove the Block B from the Mounting Gauge Plate.
- (10) Mount the R-8L record head assembly onto the Mounting Gauge Plate.
- (11) As shown in Fig. 2.18, loosen 2 pcs. of screws that assemble record head and record head plate.

As the location of the Block A is secured by the item (8)-(c), push the record head to the directions A and B, then tighten 2 pcs. of screws.
- (12) Check to insure freedom from gap between the Block C and record head surface, then tighten the 2 pcs. of screws on the record head assembly with lock tight paint.
- (13) Remove the R-8L record head assembly from the Mounting Gauge Plate.
- (14) Assemble the record head assembly to the head mount base assembly.
- (15) Assemble the head mount base assembly to the mechanism assembly.
- (16) Check the record head stroke.

If the above are inaccurate, items (1) through (16) will have to be repeated till satisfactory results are obtained.

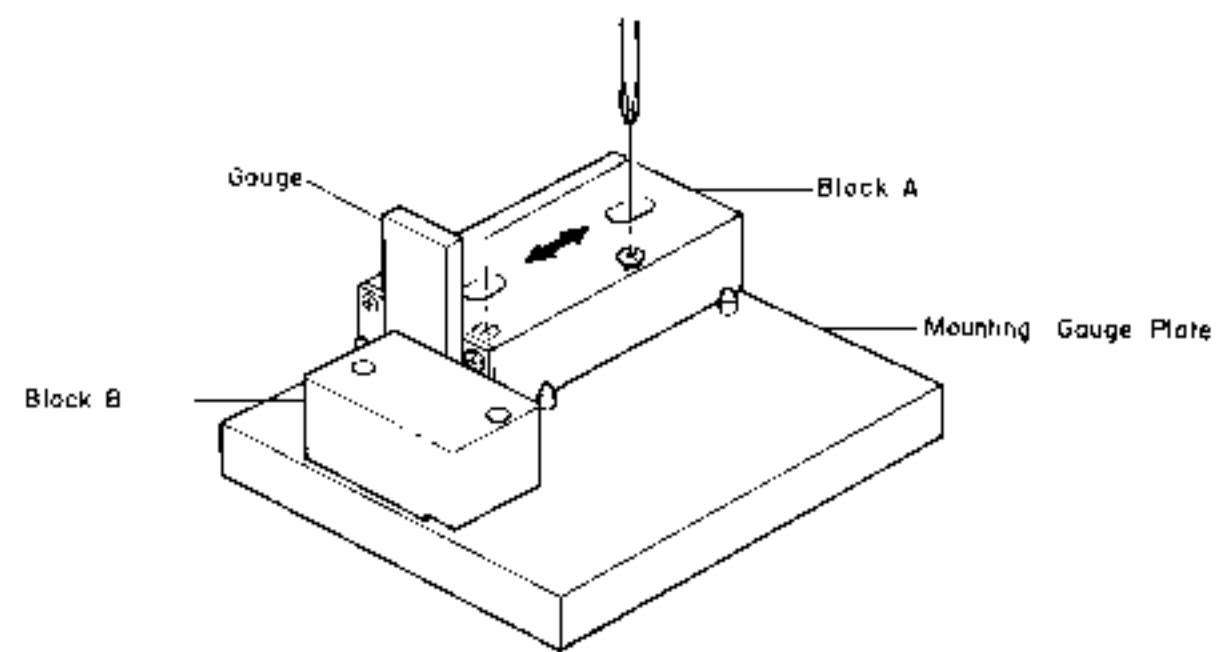
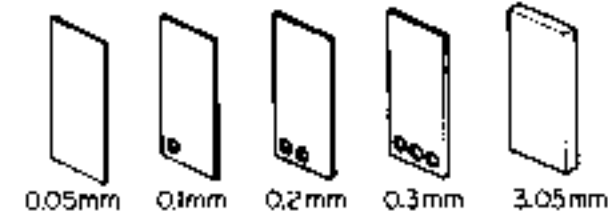


Fig. 2.17

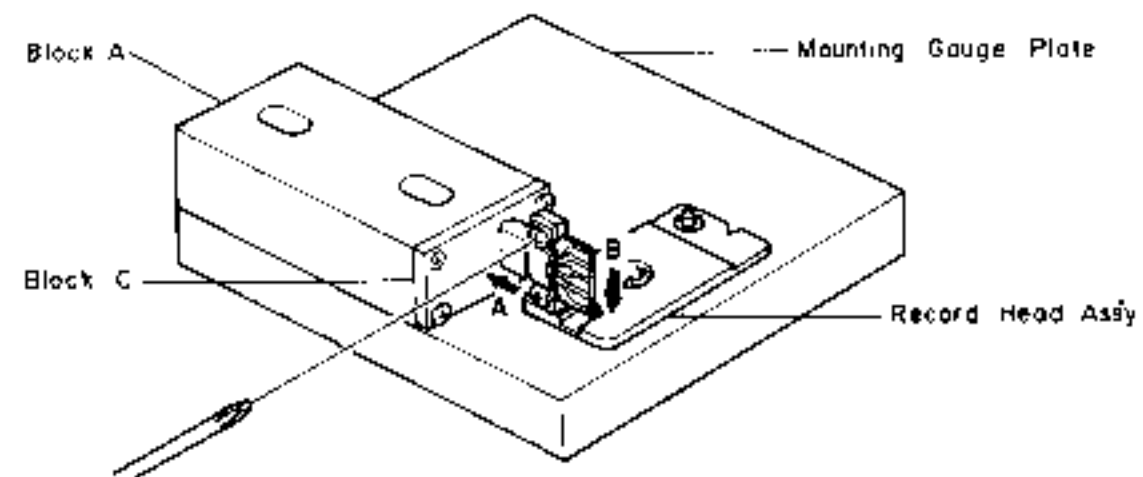


Fig. 2.18

2.10. Tape Travelling Adjustment

The adjustment shall be made with a modified version of the current type EXII C-90 as shown in Fig. 2.19. (error will be made if a current type Tape Travelling Cassette (DA09011A) should be used for this purpose).

While modifying an EXII C-90, the tape guides in the cassette housing shall be kept protected to avoid tilt.

Check shall be made in the following procedures:

- (1) An EXII C-90 tape thus modified shall be loaded onto the cassette deck.
- (2) Release the back-tension (rotate the Supply Reel and feed out some length of tape) and set the cassette deck in Play mode.
- (3) In this juncture, check to insure whether the tape is free from waving or slippage from the tape guide.
- (4) When the modified EXII C-90 is played back, check to insure whether the tape is freedom from waving from head surface or at pressure rollers.
- (5) If either of waving or slippage from the tape guide should be noted, adjustments of items 2.3 to 2.9, etc. will be required.

As a case may be, the said waving or slippage may have been caused from defective Supply Pressure Roller Ass'y or Take-up Pressure Roller Ass'y without parallel contact with capstans. If such are noted, the Pressure Roller Assemblies will have to be replaced.

Further, excessively weak take-up torque or strong take-up torque may cause defective tape travelling.

The cassette deck is intended to be an adjustment-free model, however if the similar matters as above should be noted, please replace the Reel Hub Ass'y to obtain appropriate take-up torque.

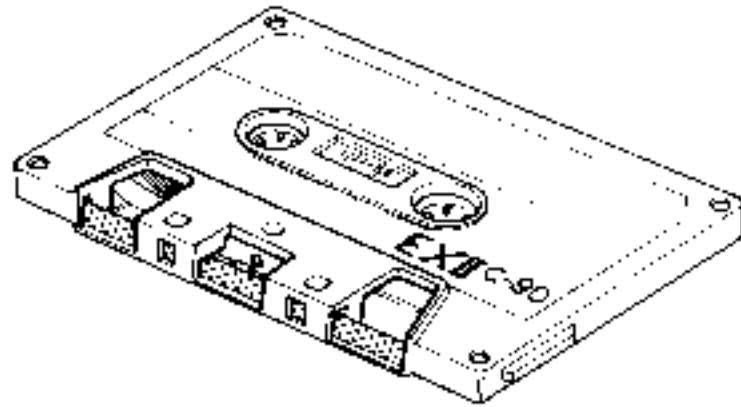


Fig. 2.19

2.11. Flywheel Ass'y Height Adjustment

Refer to Fig. 2.20.

- (1) Adjust the Thrust Screw so that the gap between the Motor Coil Ass'y and the Take-up Flywheel Ass'y becomes 0.7 mm.
- (2) Connect a synchroscope to the CN22-1 of the D/D Motor control P.C.B. Ass'y. Set the synchroscope to AC input.
- (3) Check to insure that the peak to peak level of sine waveform is greater than 20 mV.
- (4) Adjust the Thrust Screw until the height of the Supply Flywheel Ass'y becomes equal to that of the Take-up Flywheel Ass'y.
- (5) Apply a quantity of lock tight paint to the Thrust Screws.

Note: Perform the following procedures, if the Flywheel Ass'y is replaced.

- (a) Turn the Thrust Screw so that the gap between the Motor Coil Ass'y and the Flywheel Ass'y becomes approx. 1 mm.
- (b) From the front side of the cassette deck, insert the Washer 3.1 mm FT (2.6 mm FT), then press the Washer 3 mm (Washer 2.5 mm) into the capstan shaft for supply (take-up) until the washer contacts with the flange sufficiently. Refer to Fig. 5.8.
- (c) Perform the "Flywheel Ass'y Height Adjustment" in item 2.11. •

2.12. Lubrication

ZX-9 is a lubrication-free cassette deck except when parts are replaced. Apply the following lubricant for each replaced part:

- (1) LAUNA #100
Capstan Shaft
Pressure Roller Shaft
Thrust Cap
- (2) FLOIL GB-TS-1
Reel Hub Shaft
Thrust portion on the Capstan Shaft
FLOIL GB-TS-1, made by Kanto Chemicals Co., Ltd. in Japan.
We suggest that you use the above or equivalent type. If unavailable please contact Kanto Chemicals Co., Ltd., 2-7 Kanda Suda-cho Chiyoda-ku, Tokyo 101 Japan.
- (3) Silicon Oil #3000 CST
Air Damper Piston

Note: Excessive lubrication may cause defective damper action as the 0.2 ϕ hole at the end of the cylinder may be filled with oil.

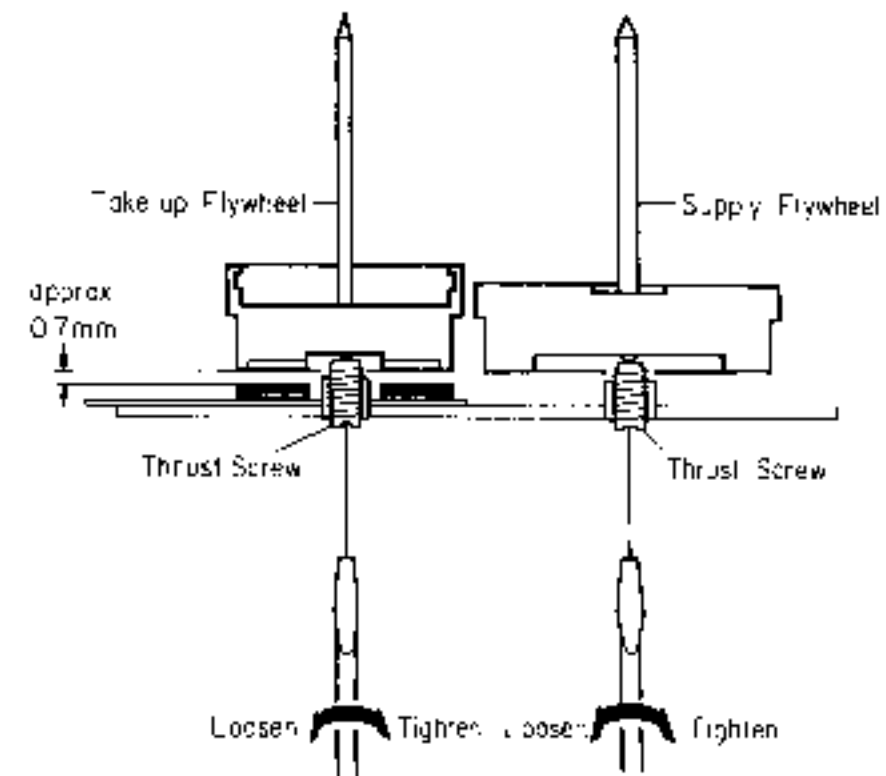


Fig. 2.20

3. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

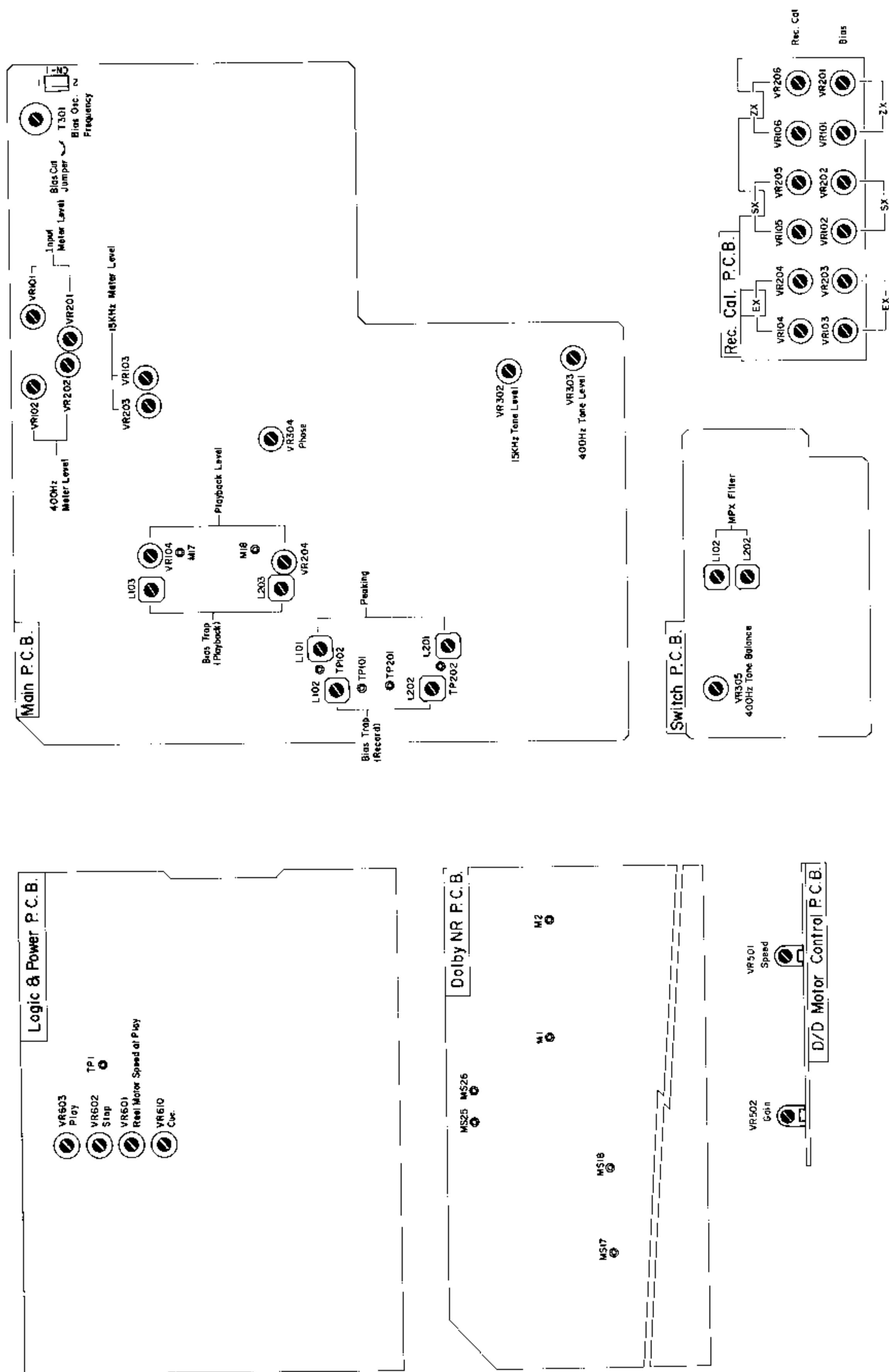


Fig. 3

4. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

Note: Electrical adjustment should be performed after mechanical adjustment is completed.
 4.1. Adjustment and Measurement Instructions

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Tape Speed and Motor Gain Adjustment	3 kHz Speed and Wow/Flutter Tape (DA09006B)	Frequency Counter and Wow/Flutter Meter to Output Jacks	Playback	D/D Motor Control P.C.B. VR501 (Speed) VR502 (Gain)	<ol style="list-style-type: none"> 1. Adjust VR501 to obtain 3 kHz $\pm 0.5\%$ on the frequency counter. 2. Adjust VR502 to obtain the minimum reading on the wow/flutter meter. 3. Check to insure that the tape speed is 3 kHz $\pm 0.5\%$ on the frequency counter.
2	Tone Level Calibration	Tone 400 Hz and 15 kHz	VTVM to MS25, MS26 on Dolby NR P.C.B. and Output Jacks	Tone — 400 Hz/ 15 kHz Monitor SW — Source	Main P.C.B. VR303 (400 Hz) VR302 (15 kHz) Switch P.C.B. VR305 (400 Hz Balance)	<ol style="list-style-type: none"> 1. Press the Level Calibration Start button to oscillate 400 Hz. 2. Adjust VR303 to obtain 90 mV on the VTVM at MS26 (R ch). 3. Adjust VR305 to obtain the same level as R ch on the VTVM at MS25. 4. Measure the reading on the VTVM at the Output Jacks. 5. Press the Bias Calibration Start button to oscillate 15 kHz. 6. Adjust VR302 to obtain 20 dB lower level than in 4 on the VTVM at the Output Jacks. 7. Press the Calibration Reset button to stop the tone oscillation.
3	Meter Level Calibration	400 Hz to Input Jacks and Tone 400 Hz and 15 kHz	VTVM to MS25, MS26 on Dolby NR P.C.B.	Tone — OFF/400 Hz/ 15 kHz Monitor SW — Source	Main P.C.B. VR101, VR201 VR102, VR202 VR103, VR203 VR303 (400 Hz) VR302 (15 kHz)	<ol style="list-style-type: none"> 1. Feed in 400 Hz, then adjust the Input Level controls to obtain 90 mV -1.3 dB on the VTVM. 2. Adjust VR101 (VR201) so that the 0 dB segment of the level meter starts illuminating. 3. Press the Level Calibration Start button to oscillate 400 Hz, then adjust VR303 to obtain 90 mV -0.5 dB on the VTVM. 4. Adjust VR102 (VR202) so that the 0 dB segment of the level meter starts illuminating. 5. Press the Bias Calibration Start button to oscillate 15 kHz, then adjust VR302 to obtain 9 mV -0.5 dB on the VTVM. 6. Adjust VR103 (VR203) so that the 0 dB segment of the level meter starts illuminating. 7. Press the Calibration Reset button. 8. Re-adjust the tone level according to step 2 "Tone Level Calibration".
4	MPX Filter Adjustment	19 kHz ± 100 Hz to Input Jacks	VTVM to Output Jacks	Monitor SW — Source Dolby NR SW — OFF MPX SW — IN	Switch P.C.B. L102, L202	<ol style="list-style-type: none"> 1. Turn the Output level control fully clockwise (maximum position). 2. Adjust the Input Level controls to obtain 1 V on the VTVM. 3. Set the MPX Filter switch to IN, then adjust L102 (L202) to obtain the minimum reading on the VTVM (the minimum reading will be less than -30 dB).
5	Playback Head Track Alignment	1 kHz Track Alignment Tape (DA09007A)	VTVM to Output Jacks	Playback Monitor SW — Tape Eq. SW — $70 \mu s$ Dolby NR SW — OFF MPX SW — OUT	PH Height Gear	Adjust the PH Height Gear to obtain minimum readings of both channels on the VTVM. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 2.8.
6	Playback Head Azimuth Alignment	15 kHz Azimuth Tape (DA09004A)	VTVM to Output Jacks	Playback Monitor SW — Tape Eq. SW — $70 \mu s$ Dolby NR SW — OFF MPX SW — OUT	Playback Head Azimuth Alignment Screw	Adjust the Playback Head Azimuth Alignment Screw to obtain maximum readings of both channels on the VTVM. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 2.8. Note: Repeat steps 5 and 6 one or two times to obtain optimum performance.
7	Playback Level Calibration	400 Hz Level Tape (DA09005A)	VTVM to MS25, MS26 on Dolby NR P.C.B.	Same as above	Main P.C.B. VR104, VR204	Adjust VR104 (VR204) to obtain 90 mV on the VTVM.
8	Playback Frequency Response Adjustment	400 Hz Level Tape (DA09005A) 10 kHz PB Frequency Response Tape (DA09003A) 15 kHz PB Frequency Response Tape (DA09002A) 20 kHz PB Frequency Response Tape (DA09001A)	VTVM to Output Jacks	Playback Monitor SW — Tape Tape SW — SX Eq. SW — $70 \mu s$ Dolby NR SW — OFF MPX SW — OUT	Main P.C.B. R155, R255 R156, R256	<ol style="list-style-type: none"> 1. Load a 400 Hz level tape and play it back. Adjust the Output level control to a certain level (0 dB for example). 2. Load 10 kHz, 15 kHz and 20 kHz PB frequency response tapes and adjust the playback head azimuth to obtain maximum levels on the VTVM with each tape. Short R155 (R255) or R156 (R256) to obtain the following levels against the level for the 400 Hz level tape. 10 kHz: -20 dB -1 dB to $+2$ dB 15 kHz: -20 dB -1 dB to $+3$ dB 20 kHz: -20 dB -1 dB to $+4$ dB 3. Conduct step 6 "Playback Head Azimuth Alignment". 4. If above is not sufficient, refer to "Playback Frequency Response Adjustment" in item 4.2.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
9	Bias Oscillation Frequency and Erase Current Adjustment		VTVM across the additional 0.1 Ω resistor and Frequency Counter to CN1-1 on Main P.C.B.	Record, Pause Monitor SW — Source Tape SW — ZX Eq. SW — 70 μ s Dolby NR SW — OFF MPX SW — OUT	Main P.C.B. T301 R309,R310	<ol style="list-style-type: none"> 1. Connect an additional 0.1 Ω resistor in series to the Erase Head, then connect a VTVM across it. 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 R309 or R310. 4. After completion of the erase current adjustment, re-check the bias oscillation frequency. 5. Remove the additional 0.1 Ω resistor.
10	Record Amplifier Equalizer Adjustment	23 kHz (-20 dB) to Input Jacks	VTVM to TP101, TP201 on Main P.C.B.	Same as above	Main P.C.B. L101,L201	<ol style="list-style-type: none"> 1. Remove the bias-cut-jumper from the dip side of the Main P.C.B. Ass'y. 2. Adjust L101 (L201) to obtain approx. +16 dB at 23 kHz on the VTVM. 3. Re-solder the bias-cut-jumper.
11	Bias Trap Adjustment (Record Amp.)	Remove input signals	VTVM to TP102, TP202 on Main P.C.B.	Same as above	Main P.C.B. L102,L202	Adjust L102 (L202) to obtain minimum reading on the VTVM.
12	Bias Trap Adjustment (Playback Amp.)	Remove input signals	VTVM to M17, M18 on Main P.C.B.	Record, Pause Monitor SW — Tape Tape SW — ZX Eq. SW — 70 μ s Dolby NR SW — OFF	Main P.C.B. L103,L203	Adjust L103 (L203) to obtain minimum reading on the VTVM.
13	Record Head Height Adjustment and Azimuth Alignment	Tone 400 Hz and 15 kHz	VTVM to Output Jacks	Record, Playback Monitor SW — Tape Tape SW — SX Eq. SW — 70 μ s Dolby NR SW — OFF	PH Height Gear Record Head Azimuth Alignment Screw Rec. Cal. P.C.B. (Level) VR105,VR205 (Bias Current) VR102,VR202 Main P.C.B. VR304 (Phase)	<ol style="list-style-type: none"> 1. In Stop mode, press the Azimuth Alignment Start button to ON. Then adjust the Azimuth Alignment knob so that the Slide Lever of the Azimuth Alignment Wire is located at the center of the slit of the Azimuth Alignment Wire as shown in Fig. 2.14. After above adjustment, press the Azimuth Alignment Start button to OFF. 2. Record Head Height Adjustment: <ol style="list-style-type: none"> a. Load a reference SX tape (DA09025A), then press the Record and Play buttons. b. Press the Level Calibration Start button to oscillate 400 Hz. c. Adjust the Sensitivity Control VR105 (VR205) and Bias Control VR102 (VR202) to the center position. d. Adjust the RH Height Gear to obtain maximum readings of both channels on the VTVM. 3. Record Head Azimuth Alignment: <ol style="list-style-type: none"> a. Load a reference SX tape (DA09025A), then press the Record and Play buttons. b. Press the Bias Calibration Start button to oscillate 15 kHz. c. Adjust the Record Head Azimuth Alignment Screw to obtain maximum readings of both channels on the VTVM. d. Repeat 2 and 3 one or two times to obtain optimum performance. 4. Azimuth Phase Adjustment: <ol style="list-style-type: none"> a. Press the Record and Play buttons. b. Press the Azimuth Alignment Start button to ON, then adjust VR304 on the Main P.C.B. Ass'y so that the red indicator in the middle of the Azimuth Indicator is lit up.
14	Record Level Calibration and Recording Bias Current Adjustment	Tone 400 Hz and 15 kHz and 10 kHz/20 kHz (-20 dB) to Input Jacks	VTVM and Distortion Meter to Output Jacks	Record, Playback Tone — 400 Hz/15 kHz Monitor SW — Tape Tape SW — ZX/SX/EX Eq. SW — 70 μ s (ZX/SX) 120 μ s (EX) Dolby NR SW — C-Type/B-Type/OFF MPX SW — OUT	Rec. Cal. P.C.B. (Level) ZX: VR106,VR206 SX: VR105,VR205 EX: VR104,VR204 (Bias) ZX: VR101,VR201 SX: VR102,VR202 EX: VR103,VR203	<p>Adjustment should be made in the order of ZX, SX and EX.</p> <ol style="list-style-type: none"> 1. Set the Dolby NR switch to C-Type. 2. Load a reference ZX tape (DA09037A), reference SX tape (DA09025A) and reference EXII tape (DA09066A). 3. Adjust Sensitivity Controls VR106 (VR206) for ZX, VR105 (VR205) for SX and VR104 (VR204) for EXII to the maximum position. 4. Adjust Bias Controls VR101 (VR201) for ZX, VR102 (VR202) for SX and VR103 (VR203) for EXII to the maximum position. 5. Press the Record and Play buttons, then press the Azimuth Alignment Start button to ON. Turn the Azimuth Alignment Knob so that the red indicator in the middle of the Azimuth Indicator is lit up. After above adjustment, press the Azimuth Alignment Start button to OFF.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
14 (continued)						<ol style="list-style-type: none"> 6. Press the Record and Play buttons, then press the Level Calibration Start button to oscillate 400 Hz. 7. Adjust Sensitivity Controls VR106 (VR-206), VR105 (VR205) and VR104 (VR-204) to obtain 0 dB on the level meters. 8. Press the Bias Calibration Start button to oscillate 15 kHz. 9. Adjust Bias Controls VR101 (VR201), VR102 (VR202) and VR103 (VR203) to obtain 0 dB on the level meters. 10. Repeat 6 to 9 as above two or three times to obtain optimum performance. 11. Set the Dolby NR switch to B-Type/OFF. 12. Feed in 10 kHz (-20 dB) and 20 kHz (-20 dB), then record and play it back. Check to insure that the levels are within -20 dB \pm 2 dB against the levels in Dolby NR C-Type. 13. Check to insure whether the total harmonic distortion is less than 0.8% for ZX tape and 1.0% for SX and EXII tapes.
15	Overall Frequency Response Adjustment	400 Hz (0 dB) and 20 Hz to 20 kHz (-20 dB) to Input Jacks	VTVM to Output Jacks	Record, Playback Monitor SW - Source/ Tape Tape SW - ZX/SX/EX Eq. SW - 70 μ s (ZX/SX) 120 μ s (EX) Dolby NR SW - OFF MPX SW - OUT	Main P.C.B. L101, L201	<ol style="list-style-type: none"> 1. Perform the Azimuth Alignment operation as follows: <ol style="list-style-type: none"> a. Press the Record and Play buttons. b. Press the Azimuth Alignment Start button to ON. c. Turn the Azimuth Alignment Knob so that the red indicator in the middle of the Azimuth Indicator is lit up. d. After above adjustment, press the Azimuth Alignment Start button to OFF. 2. Set the Monitor switch to Source. 3. Feed in 400 Hz (0 dB) and adjust the Input Level controls to obtain 0 dB on the level meters. 4. Switch the Generator output level to -20 dB. 5. Set the Monitor switch to Tape, then record and play it back. 6. Feed in 20 Hz to 20 kHz (-20 dB), and check to insure whether the output levels are within -20 dB \pm 3 dB. 7. If above is not sufficient, adjust L101 (L201) to obtain approx. -20 dB on the VTVM at 20 kHz. 8. Conduct step 14 "Record Level Calibration and Recording Bias Current Adjustment". 9. If above is not sufficient, precise re-adjustment of step 8 "Playback Frequency Response", replacement of Playback Head or Record Head, check on item 2.10 "Tape Travelling Adjustment" or frequency response adjustment according to item 4.2 will be required.
16	Crosstalk Measurement	1 kHz to Input Jacks	1 kHz Band Pass Filter and VTVM to Output Jacks	Record and Playback Monitor SW - Tape Tape SW - ZX Eq. SW - 70 μ s Dolby NR SW - OFF		<ol style="list-style-type: none"> 1. Perform the Azimuth Alignment operation referring to step 15-1. 2. Erase a reference ZX tape with bulk eraser. 3. Adjust the Input Level controls to obtain 0 dB on the level meters, and record the signals on the reference tape. 4. Turn the cassette tape the other way round and play it back. 5. Measure the difference between 3 and 4.
17	Channel Separation Measurement	1 kHz to Input Jacks	Same as above	Same as above		<ol style="list-style-type: none"> 1. Perform the Azimuth Alignment operation referring to step 15-1. 2. Erase a reference ZX tape with bulk eraser. 3. Adjust the L ch (R ch) Input Level control to obtain 0 dB on the level meters, and close the R ch (L ch) Input Level control. 4. Record and play it back, then measure the R ch (L ch) level.
18	Erasure Measurement	1 kHz to Input Jacks	Same as above	Same as above		<ol style="list-style-type: none"> 1. Perform the Azimuth Alignment operation referring to step 15-1. 2. Erase a reference ZX tape with bulk eraser. 3. Adjust the Input Level controls to obtain 0 dB on the level meters, and record the signals on the reference tape. 4. Rewind the tape then close the Input Level controls. 5. Record and play it back, then measure the difference between 3 and 4.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
19	Signal to Noise Ratio Measurement	400 Hz to Input Jacks	VTVM and Distortion Meter to Output Jacks	Record and Playback Monitor SW — Tape Tape SW — ZX Eq. SW — 70 μ s Dolby NR SW — B-Type/C-Type		<ol style="list-style-type: none"> 1. Perform the Azimuth Alignment operation referring to step 15-1. 2. Feed in 400 Hz and record and play it back. 3. Adjust the Input Level controls to obtain 3% total harmonic distortion in Playback mode. 4. Close the Input Level controls, then record. 5. After rewind, play back and check the output level difference between 3 and 4. Note: The filter of IHF-A curve shall be used in the measurements.
20	Total Harmonic Distortion Measurement	400 Hz to Input Jacks	Distortion Meter to Output Jacks	Record and Playback Monitor SW — Tape Tape SW — ZX/SX/EX Eq. SW — 70 μ s (ZX/SX) 120 μ s (EX) Dolby NR SW — OFF		<ol style="list-style-type: none"> 1. Perform the Azimuth Alignment operation referring to step 15-1. 2. Adjust the Input Level controls to obtain 0 dB on the level meters. 3. Record and play it back. 4. Read the distortion meter and check to insure that the distortion is less than 0.8% for ZX tape and 1.0% for SX and EXII tapes.
21	Wow/Flutter Measurement	3 kHz Speed and Wow/Flutter Tape (DA09006B)	Wow/Flutter Meter to Output Jacks	Playback Monitor SW — Tape Eq. SW — 70 μ s		Play back and read the wow/flutter meter.

4.2. Frequency Response Adjustment

(1) Playback Frequency Response Adjustment

Refer to Figs. 4.2.1 and 4.2.2.

(a) Level Adjustment (for middle frequency response)

This adjustment will be required if playback level is not sufficient when 10 kHz PB frequency response tape is played back as referred to step 8 in 4.1 "Adjustment and Measurement Instructions".

Playback equalization level is varied by the modification of R159 (R259) on the Main P.C.B. Ass'y and R154 (R254) on the Dolby NR P.C.B. Ass'y.

Following are the details for level modifications:

- Approx. +1 dB R159 (R259): 8.66K
R154 (R254): 6.49K
- 0 dB R159 (R259): 8.06K
R154 (R254): 6.98K
- Approx. -1 dB R159 (R259): 7.32K
R154 (R254): 7.87K

(b) Peaking Adjustment (for high frequency response)

This adjustment will be required if playback level is not sufficient when 20 kHz PB frequency response tape is played back as referred to step 8 in 4.1 "Adjustment and Measurement Instructions". Peaking portion compensates the gap loss of the playback head. Peaking level is varied by the short circuit of R155 (R255) or R156 (R256) on the Main P.C.B. Ass'y as illustrated in Fig. 4.2.2.

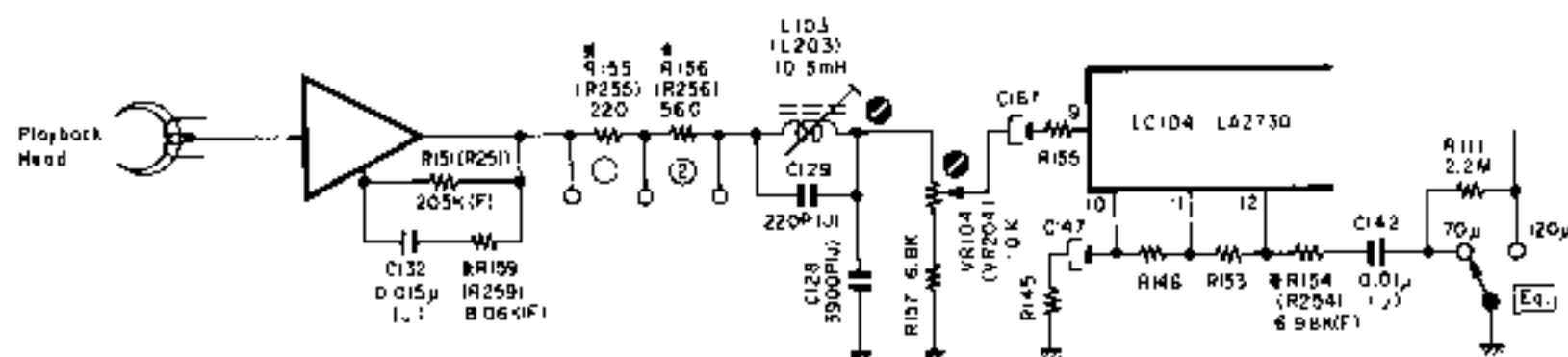


Fig. 4.2.1 Playback Amp.

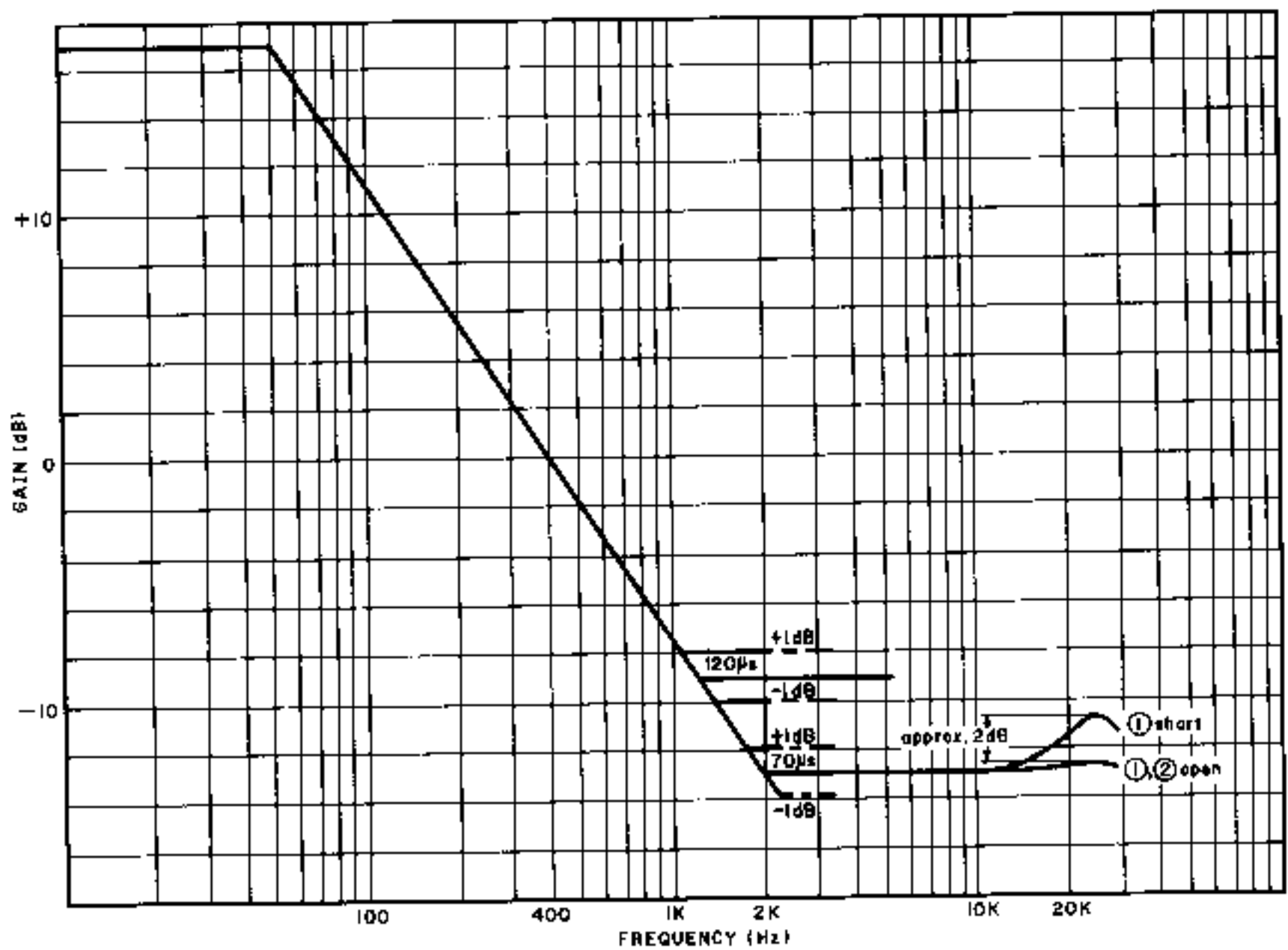


Fig. 4.2.2 Playback Equalization Curve

(2) Record Current Frequency Response Adjustment

Record eq. peaking is adjusted for compensating the overall frequency response when playback frequency response is completed.

Normally however peaking frequency is pre-adjusted to approx. 23 kHz in Record mode. Refer to Fig. 4.2.3.

(a) For ZX Tape

- 1) Feed in 400 Hz (0 dB), then record and play it back. Adjust bias current by VR106 (VR206) on the Record Cal. P.C.B. Ass'y to obtain a 0.8% distortion.
- 2) Feed in 10 kHz and 400 Hz (-20 dB), then record and play them back.

Check the difference of the levels between 10 kHz and 400 Hz, and mount an additional capacitor in parallel with C101 (C201) on the Main P.C.B. Ass'y from the dip side of the printed circuit board depending upon the difference of the levels against 400 Hz.

Refer to Fig. 4.2.4.

Level Difference	Addition	Total
0 dB	0	820 pF
-1 dB	220 pF	1040 pF

- 3) Feed in 22 kHz (-20 dB), then record and play it back. Adjust record peaking coil L101 (L201) to obtain flat overall frequency response.

(b) For SX Tape

- 1) Feed in 15 kHz and 400 Hz (-20 dB), then record and play them back. Adjust Bias current by VR105 (VR205) on the Record Cal. P.C.B. Ass'y to obtain flat overall frequency response.
- 2) Feed in 20 kHz and 400 Hz (-20 dB), then record and play them back. And check to insure that the overall frequency response is flat.

(c) For EXII Tape

- 1) Feed in 15 kHz and 400 Hz (-20 dB), then record and play them back. Adjust bias current by VR104 (VR204) on the Record Cal. P.C.B. Ass'y to obtain flat overall frequency response.
- 2) Feed in 20 kHz and 400 Hz (-20 dB), then record and play them back. And check to insure that the overall frequency response is flat.

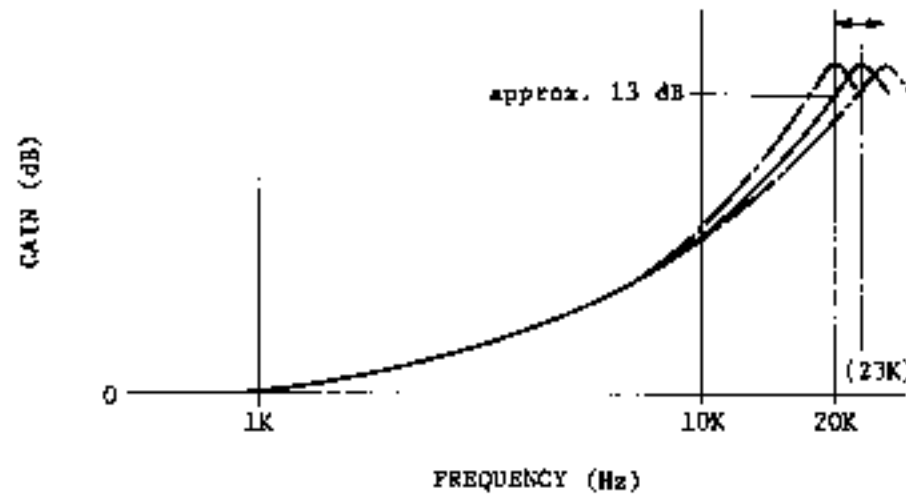


Fig. 4.2.3

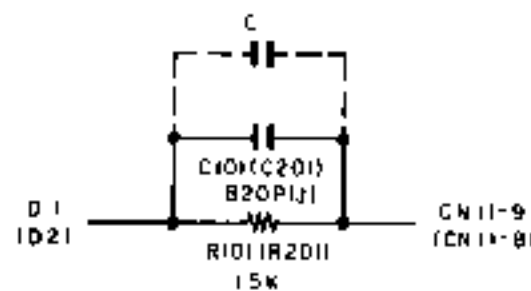


Fig. 4.2.4

4.3. Dolby NR Circuit Check

Dolby NR circuit incorporates Dolby NR ICs which have no adjustment point.

Perform the following checks and make sure that the IC operates accurately, i.e., accuracy of frequency response through IC.

4.3.1. Dolby NR B-Type Circuit Check

(1) Playback Dolby NR Circuit

Signal Source: 1.4 kHz to pin No. M17 (M18) on Dolby NR P.C.B.
 Output Connection: VTVM to MS25 (MS26) on Dolby NR P.C.B.
 Mode: Stop
 Monitor SW - Tape
 Dolby NR SW - B-Type/OFF

- (a) Connect a VTVM to MS25 (MS26) on the Dolby NR P.C.B. Ass'y.
- (b) Set the Dolby NR switch to B-Type. Feed in 1.4 kHz to pin No. M17 (M18) and adjust the generator output control to obtain 9 mV on the VTVM.
- (c) Set the Dolby NR switch to OFF. Check to insure that the reading is +3.2 dB ±1.5 dB on the VTVM.

(2) Record Dolby NR Circuit

Signal Source: 1.4 kHz to Input Jacks
 Output Connection: VTVM to MS25 (MS26) and M1 (M2) on Dolby NR P.C.B.
 Mode: Stop
 Monitor SW - Source
 Dolby NR SW - B-Type/OFF

- (a) Connect a VTVM to MS25 (MS26) on the Dolby NR P.C.B. Ass'y.
- (b) Feed in 1.4 kHz and adjust the Input Level controls to obtain 9 mV/2.85 mV on the VTVM.
- (c) Remove the VTVM from MS25 (MS26) and reconnect it to M1 (M2) on the Dolby NR P.C.B. Ass'y.
- (d) Check to insure that the reading at M1 (M2) corresponds to the following with Dolby NR switch OFF and B-Type.

Input Level at MS25, MS26	Level at M1 (IC102-16), M2 (IC202-16)	
	Dolby NR OFF	Dolby NR B-Type
9 mV	0 dB	+3.2 dB ±1.5 dB
2.85 mV	0 dB	+8.2 dB ±1.5 dB

4.3.2. Dolby NR C-Type Circuit Check

(1) Playback Dolby NR Circuit

Signal Source: 1.4 kHz to pin No. M17 (M18) on Dolby NR P.C.B.
 Output Connection: VTVM to MS25 (MS26) on Dolby NR P.C.B.
 Mode: Stop
 Monitor SW - Tape
 Dolby NR SW - C-Type/OFF

- (a) Connect a VTVM to MS25 (MS26) on the Dolby NR P.C.B. Ass'y.
- (b) Set the Dolby NR switch to C-Type. Feed in 1.4 kHz to pin No. M17 (M18) and adjust the generator output control to obtain 9 mV on the VTVM.
- (c) Set the Dolby NR switch to OFF. Check to insure that the reading is +6.5 dB ±1.5 dB on the VTVM.

(2) Record Dolby NR Circuit

Signal Source: 1.4 kHz to Input Jacks
 Output Connection: VTVM to MS25 (MS26) and M1 (M2) on Dolby NR P.C.B.
 Mode: Stop
 Monitor SW - Source
 Dolby NR SW - C-Type/OFF

- (a) Connect a VTVM to MS25 (MS26) on the Dolby NR P.C.B. Ass'y.
- (b) Feed in 1.4 kHz and adjust the Input Level controls to obtain 9 mV/2.85 mV on the VTVM.
- (c) Remove the VTVM from MS25 (MS26) and reconnect it to M1 (M2) on the Dolby NR P.C.B. Ass'y.
- (d) Check to insure that the reading at M1 (M2) corresponds to the following with Dolby NR switch OFF and C-Type.

Input Level at MS25, MS26	Level at M1 (IC102-16), M2 (IC202-16)	
	Dolby NR OFF	Dolby NR C-Type
9 mV	0 dB	+6.5 dB ±1.5 dB
2.85 mV	0 dB	+11.4 dB ±1.5 dB

5. MECHANISM ASS'Y AND PARTS LIST

5.1. Synthesis

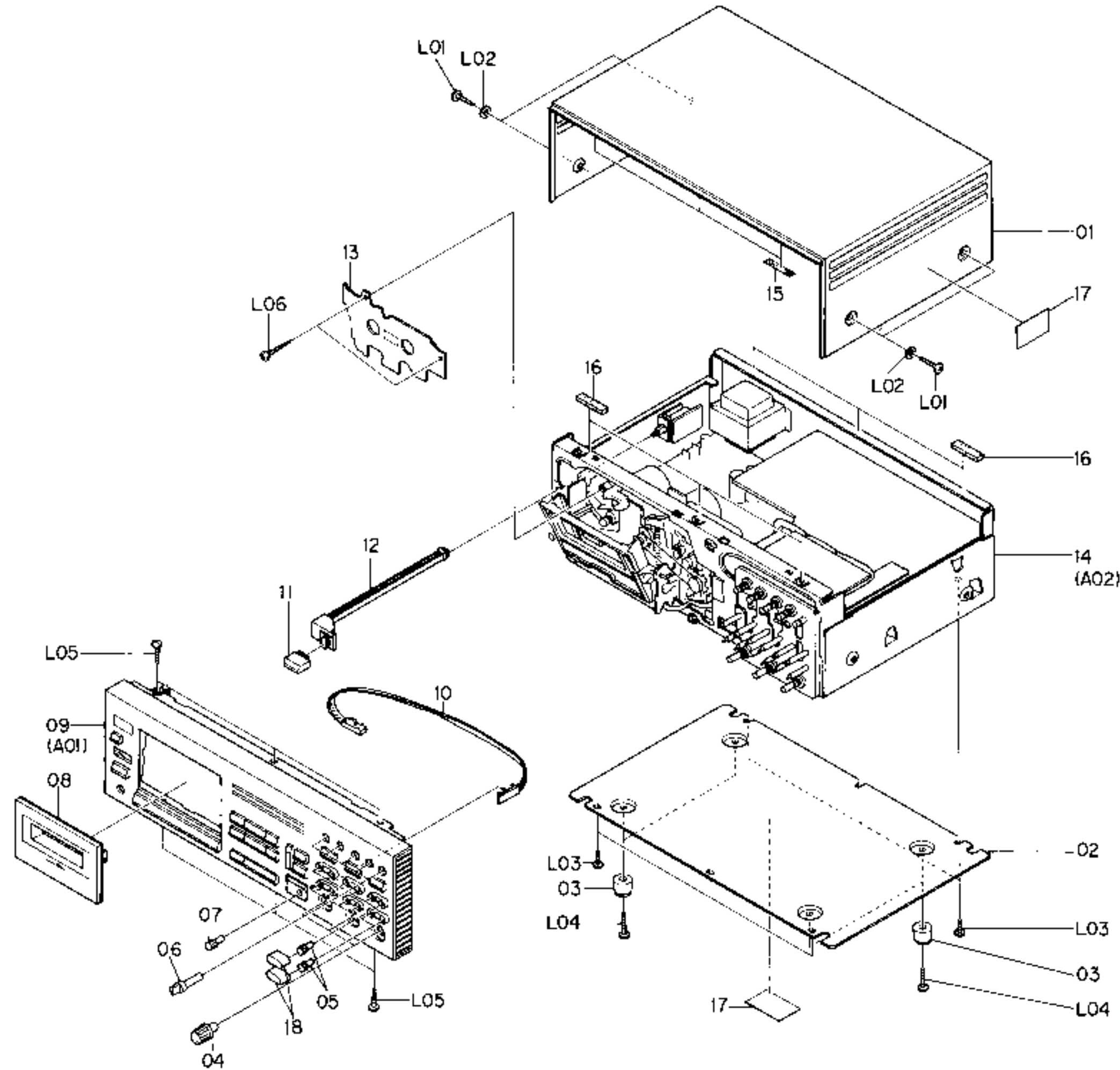
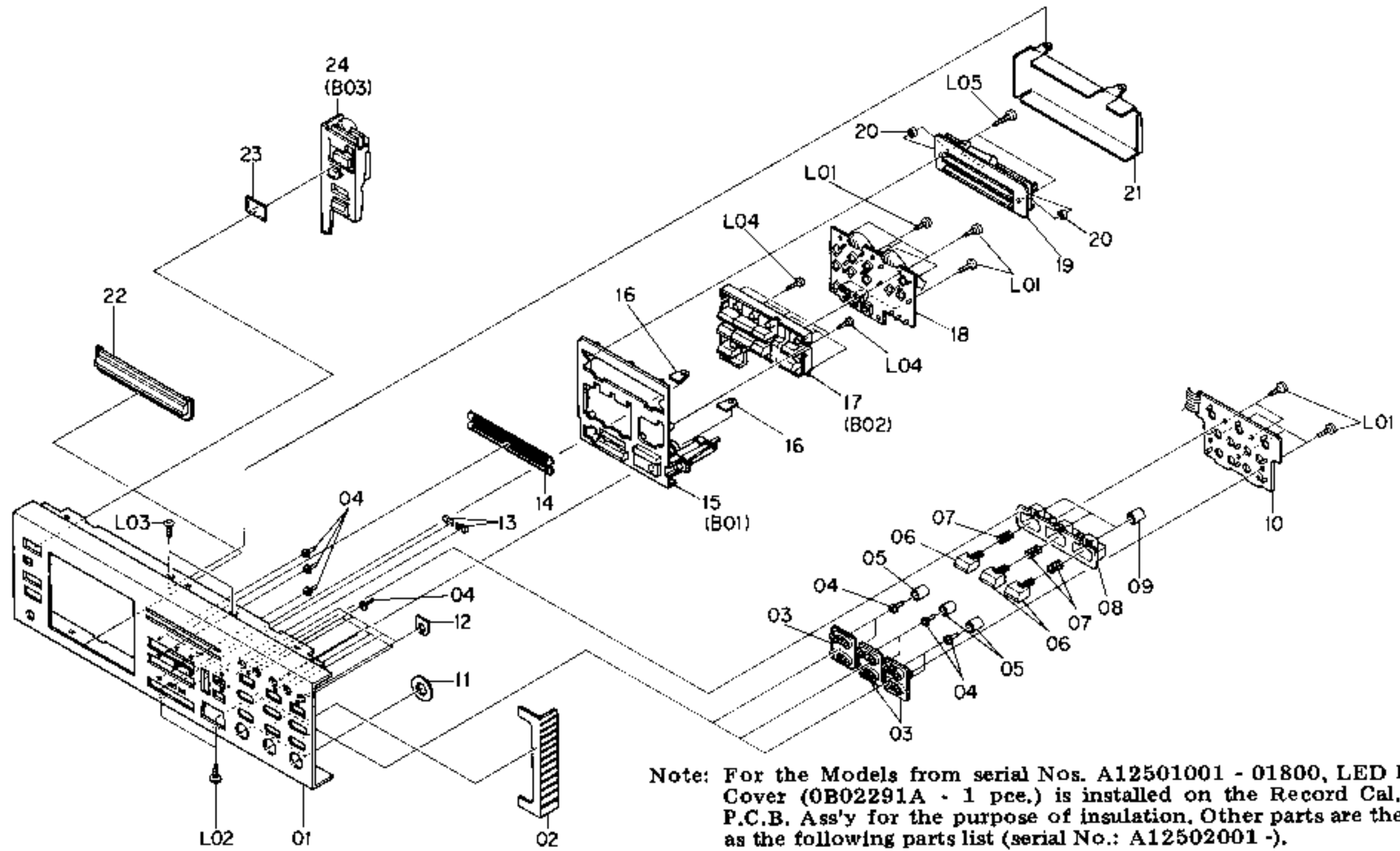


Fig. 5.1

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
	HA04315A	Synthesis (Japan)	1	16	OJ04550A	Top Cover Cushion	6
	HA04319A	Synthesis (U.S.A. & Canada)	1	17	OM04377A	Caution Label (U.S.A. & Canada)	2
	HA04318A	Synthesis (220V Class 2)	1	18	OH04065C	Control Volume Cap	6
	HA04314A	Synthesis (UK)	1	L01	OE00915A	BT M4x8 ⊕ Binding (Black Chromate)	4
	HA04317A	Synthesis (Australia)	1	L02	OE00736A	Washer 4mm (Black Chromate)	4
	HA04316A	Synthesis (Others)	1	L03	OE00857A	BT M3x6 ⊕ Binding	9
		Serial No.: A12501001 -		L04	OE00865A	BT M3x10 ⊕ Binding	4
01	OH04010A	Top Cover	1	L05	OE00921A	BT M3x8 ⊕ Binding (Black Chromate)	5
02	OJ04477A	Bottom Cover	1	L06	OE00950A	BT M3x14 ⊕ Pan (Black Chromate)	2
03	OJ03564A	Leg T-H	4				
04	OH04097A	Control Volume Knob	3				
05	HA04093A	Calibration Volume Knob	12				
06	HA04096A	Function Knob	5				
07	OH04083A	Azimuth Alignment Knob	1				
08	HA04321A	Cassette Case Ass'y	1				
09	HA04320A	Front Panel Ass'y	1				
10	OC08311A	Azimuth Wire	1				
11	HA04091A	Power Switch Knob	1				
12	OJ04490B	Power Switch Joint	1				
13	HA04329A	Cover Plate Ass'y	1				
14	JA03938A	Synthesis Mechanism Ass'y (Japan)	1				
	JA03942A	Synthesis Mechanism Ass'y (U.S.A. & Canada)	1				
	JA03941A	Synthesis Mechanism Ass'y (220V Class 2)	1				
	JA03937A	Synthesis Mechanism Ass'y (UK)	1				
	JA03940A	Synthesis Mechanism Ass'y (Australia)	1				
	JA03939A	Synthesis Mechanism Ass'y (Others)	1				
15	OJ04080A	Top Cover Himelon	3				

5.2. Front Panel Ass'y (A01)



Note: For the Models from serial Nos. A12501001 - 01800, LED P.C.B. Cover (OB02291A - 1 pce.) is installed on the Record Cal. LED P.C.B. Ass'y for the purpose of insulation. Other parts are the same as the following parts list (serial No.: A12502001 -).

Fig. 5.2

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty	
A01	HA04320A	Front Panel Ass'y Serial No.: A12502001 -	1	07	BA04547A	Azimuth Switch P.C.B. Ass'y	1	
01	OH04095A	Front Panel	1	08	OJ04502B	Cal. Volume Joint	12	
02	OH04001B	Side Cover	1	09	BA04542A	Record Cal. P.C.B. Ass'y	1	
03	OH04056B	Cal. Volume Flange	3	10	OB02228B	Cassette Case Lamp	1	
04	OH03999A	LED Lens	12	11	OJ04506C	Lamp Holder	1	
05	OJ04496A	Cal. Volume Reflector	6	12	OJ04469A	Cassette Case Plate	1	
06	OH04089A	Selector Knob	3	13	CA08389A	Mechanism Ass'y ZX-9	1	
07	OJ04497A	Selector Spring	3	14	BA04618A	Power Switch P.C.B. Ass'y (U.S.A. & Canada)	1	
08	OH04055B	Selector Flange	1		BA04620A	Power Switch P.C.B. Ass'y (UK, 220V Class 2, Australia & Others)	1	
09	OJ04541A	Selector Reflector	3		BA04594A	Power Switch P.C.B. Ass'y (Japan)	1	
10	BA04545A	Record Cal. LED P.C.B. Ass'y	1	15	BA04763A	Main P.C.B. Ass'y	1	
11	OH04002A	Volume Flange	3	16	OJ04470B	Side Chassis L	1	
12	OH04029A	Function Flange	5	17	OJ04472B	Center Chassis	1	
13	OH04031A	Fader Lens	2	18	OJ04471B	Side Chassis R	1	
14	OH04000A	Meter Cover	1	19	BA04766A	Dolby NR P.C.B. Ass'y	1	
15	HA04328A	Front Escutcheon A Ass'y	1	20	OB08771A	Hinge	2	
16	OJ04486A	Panel Holder	2	21	BA04774A	Logic & Power P.C.B. Ass'y (Japan)	1	
17	HA04311A	Control House Ass'y	1		BA04775A	Logic & Power P.C.B. Ass'y (U.S.A., Canada & Others)	1	
18	BA04544A	Control Switch P.C.B. Ass'y	1		BA04776A	Logic & Power P.C.B. Ass'y (UK, 220V Class 2 & Australia)	1	
19	BA04543A	Indicator P.C.B. Ass'y	1	22	HA04323A	Rear Panel Ass'y (Japan)	1	
20	OJ04454A	Indicator P.C.B. Stud	2		HA04327A	Rear Panel Ass'y (U.S.A. & Canada)	1	
21	OJ04458A	Meter Shield Case	1		HA04326A	Rear Panel Ass'y (220V Class 2)	1	
22	OH04023B	Cover Escutcheon	1		HA04322A	Rear Panel Ass'y (UK)	1	
23	OH04030A	Counter Lens	1		HA04325A	Rear Panel Ass'y (Australia)	1	
24	HA04310A	Front Escutcheon B Ass'y	1		HA04324A	Rear Panel Ass'y (Others)	1	
L01	OE00862A	BT M3x6 ⊕ Pan	11		OB08515A	Insu-Lock	25	
L02	OE00593A	M3x6 ⊕ Binding (Bronze)	2	23	OB02542A	Cassette Case Lamp P.C.B.	1	
L03	OE00505A	M3x6 ⊕ Countersunk	2	24	OJ04561A	Headphone Jack Cover	1	
L04	OE00859A	BT M2.6x6 ⊕ Binding	6	25	L01	OE00857A	BT M3x6 ⊕ Binding	31
L05	OE00831A	BT M3x10 ⊕ Pan	2	L01	L02	OE00944A	BT M4x15 ⊕ Binding (Black Chromate)	3
A02	JA03938A	Chassis Ass'y (Japan)	1	L03	OE00924A	BT M4x16 ⊕ Binding (Chromate)	1	
	JA03942A	Chassis Ass'y (U.S.A. & Canada)	1	L04	OE00078A	Washer 4mm Toothed Lock	4	
	JA03941A	Chassis Ass'y (220V Class 2)	1	L05	OE00612A	BT M3x6 ⊕ Pan (2A)	5	
	JA03937A	Chassis Ass'y (UK)	1	L06	OE00962A	BT M2x6 ⊕ Binding (Black Chromate)	1	
	JA03940A	Chassis Ass'y (Australia)	1	L07	OE00860A	BT M3x6 ⊕ Binding (Black Chromate)	4	
	JA03939A	Chassis Ass'y (Others) Serial No.: A12501001 -	1	L08	-	Switch Nut A	(6)	
01	JA03893A	Headphone Holder Ass'y	1					
02	OJ04135C	Mechanism Bracket	1					
03	OJ04478A	Sub Chassis	1					
04	BA04546A	Volume P.C.B. Ass'y	1					
05	BA04770A	Switch P.C.B. Ass'y	1					
06	OJ04476C	Front Chassis	1					

5.3. Chassis Ass'y (A02)

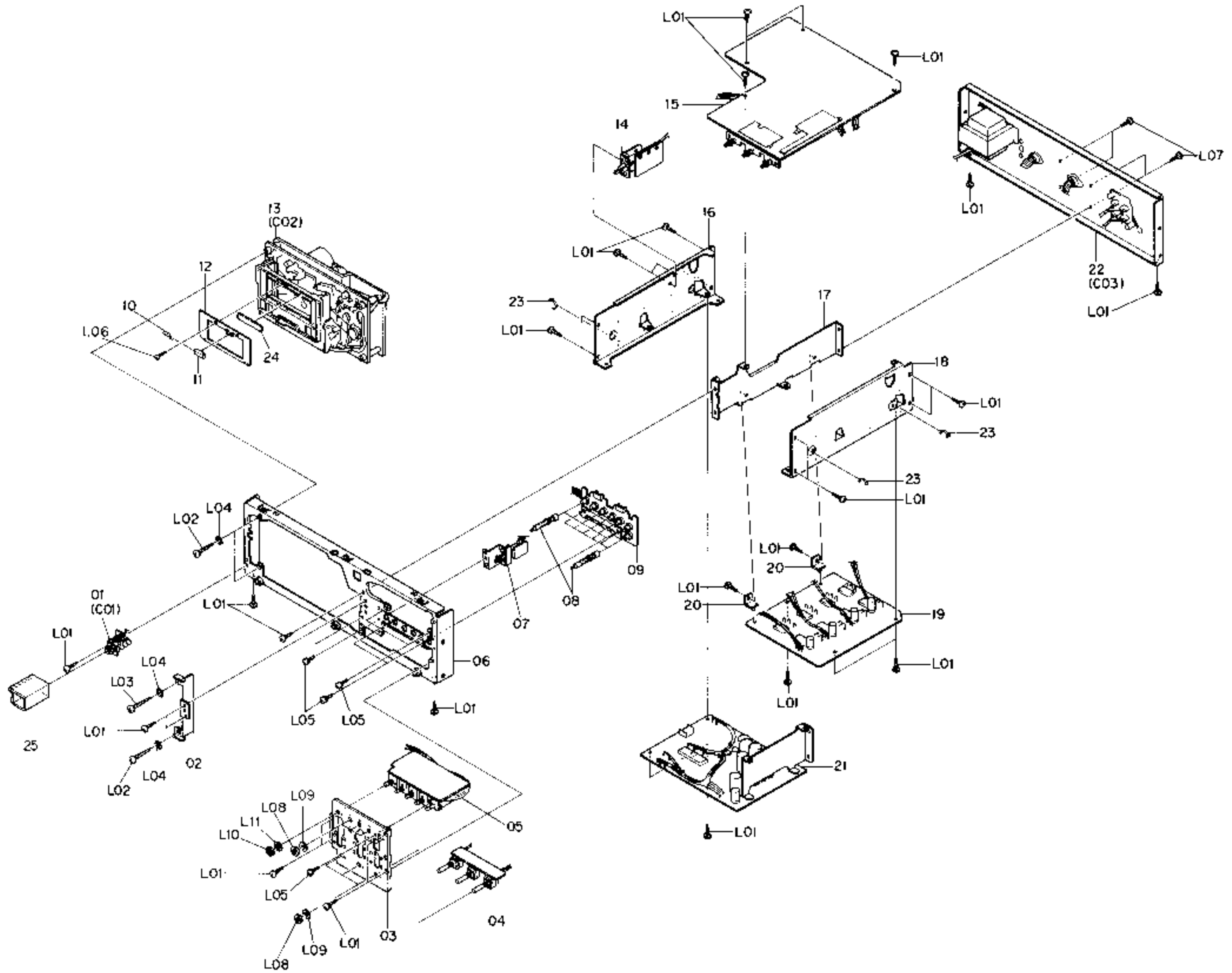


Fig. 5.3

Schematic Ref. No.	Part No.	Description	Q'ty
L09	—	Switch Washer A	(6)
L10	—	Switch Nut B	(1)
L11	—	Switch Washer B	(1)

5.4. Front Escutcheon A Ass'y (B01)

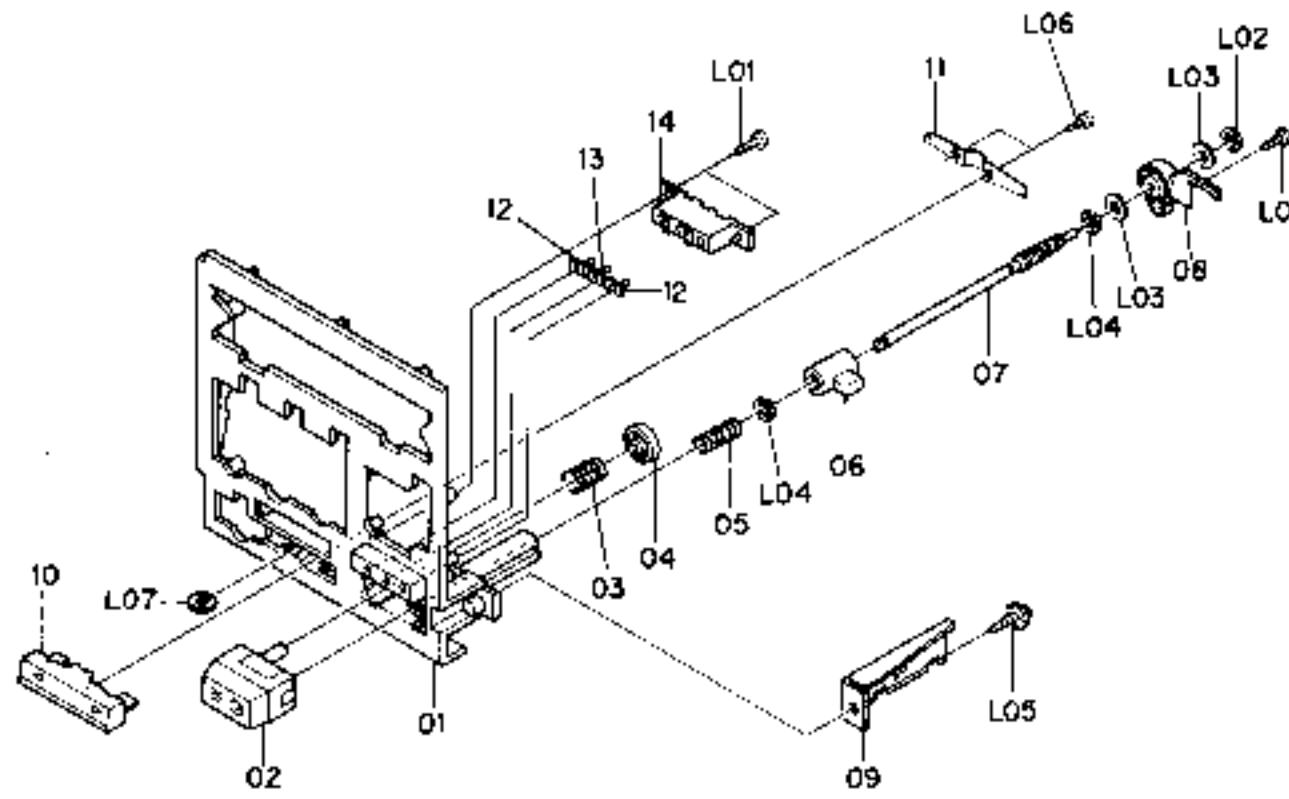


Fig. 5.4

5.5. Control House Ass'y (B02)

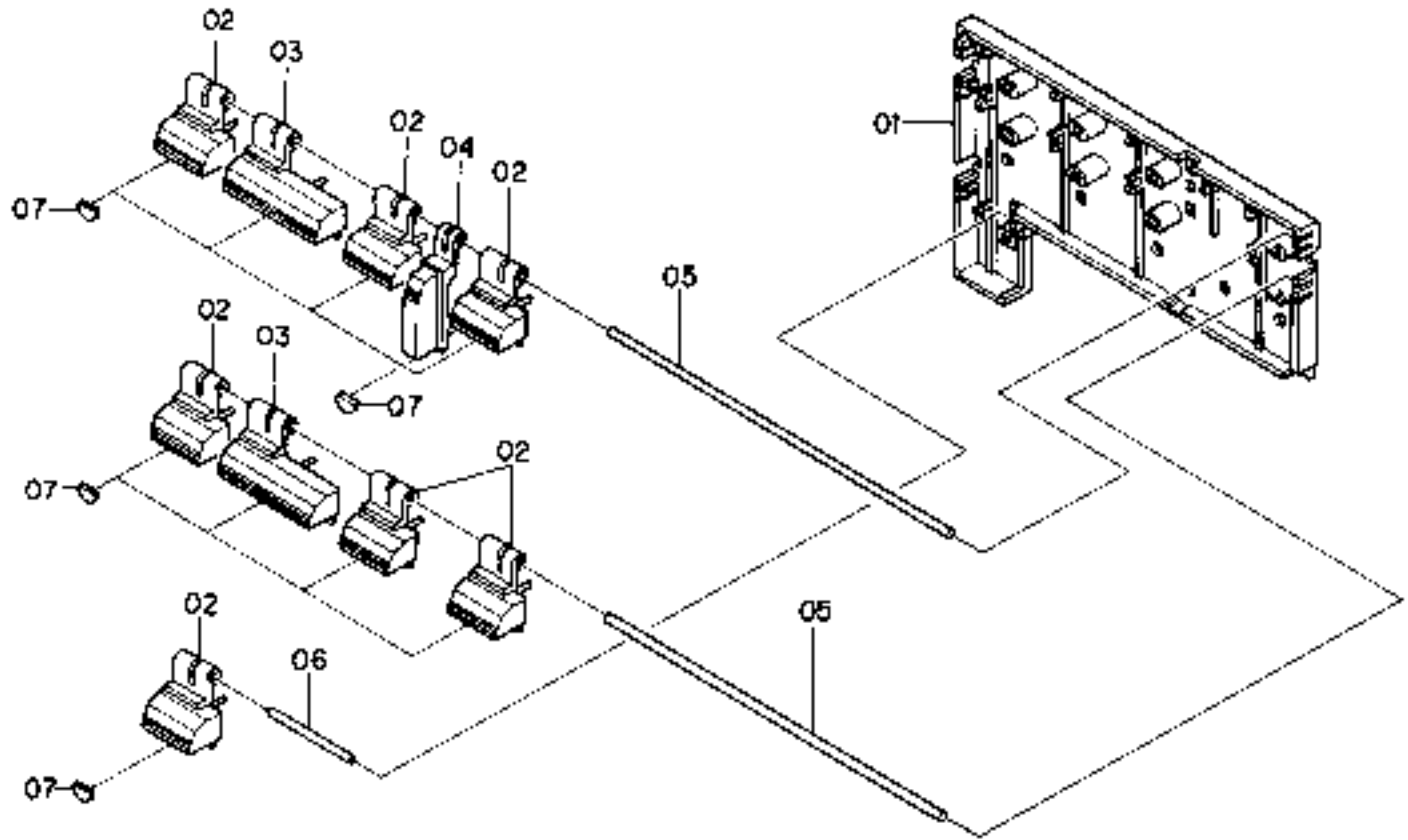


Fig. 5.5

Schematic Ref. No.	Part No.	Description	Q'ty
B01	HA04328A	Front Escutcheon A Ass'y Serial No.: A12501001 -	1
01	OH04099A	Front Escutcheon G	1
02	HA04232A	Adjustment Cover Ass'y	1
03	OJ04459A	Adjustment Knob Spring	1
04	OJ04460B	Adjustment Flange Stopper	1
05	OJ04464A	Adjustment Bar Spring	1
06	OJ04462B	Adjustment Slide Joint	1
07	OJ04463A	Adjustment Rod	1
08	OJ04461B	Adjustment Rod Stopper	1
09	OJ04465A	Adjustment Wire Holder	1
10	OH04090A	Fader Knob	1
11	OJ04467B	Fader Spring	1
12	OH04005A	Adjustment Lens A	2
13	OH04006A	Adjustment Lens B	1
14	OJ04466A	Adjustment Lamp House	1
L01	OE00961A	BT M2x5 ⊕ Binding (Chromate)	3
L02	OE00874A	Stopper Ring CS 2mm	1
L03	OJ04061A	Washer FT20	2
L04	OE00222A	E-Ring 2mm	2
L05	OE00920A	M3x6 ⊕ Pan Polywave	1
L06	OE00853A	BT M2x3 ⊕ Pan	2
L07	OJ04586A	Fader Washer	1
B02	HA04311A	Control House Ass'y Serial No.: A12501001 -	1
01	OH04016A	Control House	1
02	OH04086A	Control Knob A	7
03	OH04087A	Control Knob B	2
04	OH04088A	Control Knob C	1
05	OJ04493A	Shaft A	2
06	OJ04494A	Shaft B	1
07	OJ04495A	Control Cushion	10
B03	HA04310A	Front Escutcheon B Ass'y Serial No.: A12501001 -	1
01	OH04012C	Front Escutcheon B	1
02	OH04085A	Eject Knob	1
03	OJ04488A	Eject Spring	1
04	OJ04487B	Eject Stopper	1
05	OH04084A	Reset Switch Knob	1
06	OJ04489B	Reset Cushion	2
07	BA04548A	Counter P.C.B. Ass'y	1
08	BA04642A	Counter Control P.C.B. Ass'y	1
09	OJ04491A	Counter P.C.B. Stud	1
10	OJ04492B	Counter Shield Case	1
11	OJ04327A	Counter Himelon	1
12	OJ04563C	Counter P.C.B. Insulator	1
L01	OE00862A	BT M3x6 ⊕ Pan	2
L02	OE00883A	BT M3x18 ⊕ Pan	1
L03	OE00037A	Earth Lug B-5	1
C01	JA03893A	Headphone Holder Ass'y Serial No.: A12501001 -	1
01	OB08511A	Headphone Jack	1
02	OJ04474A	Headphone Jack Holder	1
L01	-	Headphone Jack Washer	(1)
L02	-	Headphone Jack Nut	(1)

5.6. Front Escutcheon B Ass'y (B03)

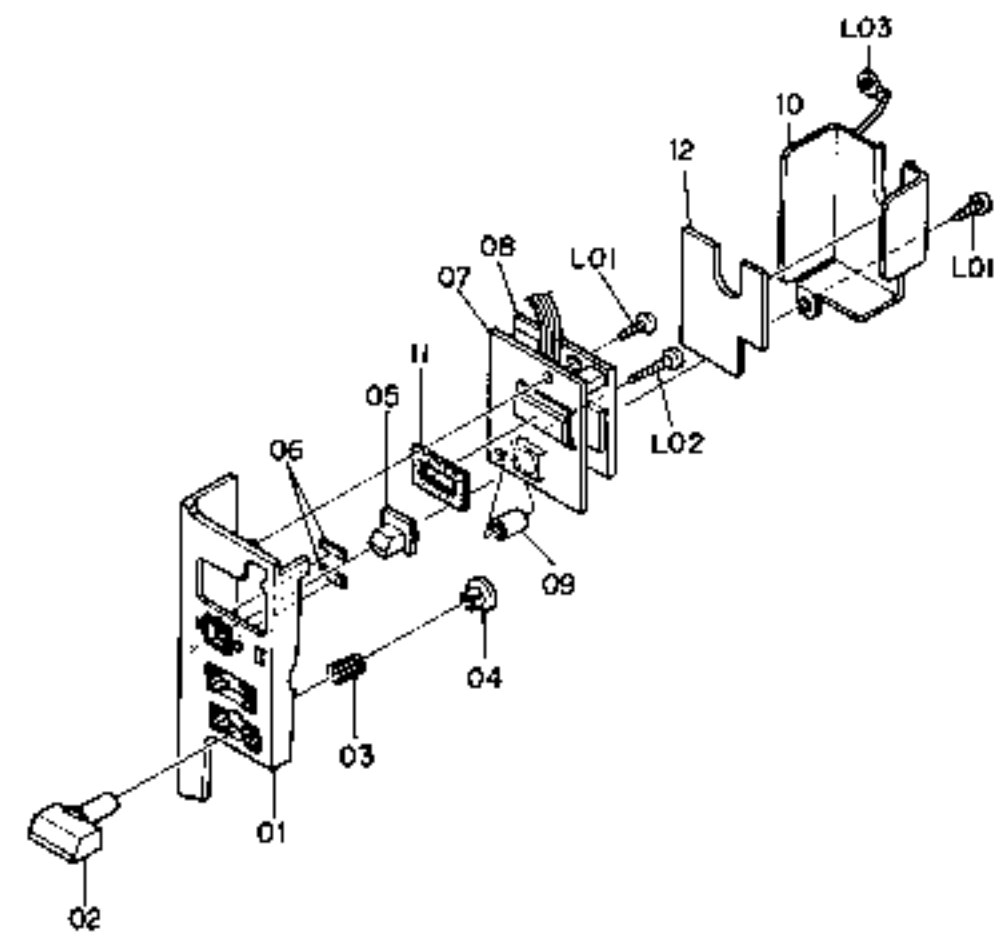


Fig. 5.6

5.7. Headphone Holder Ass'y (C01)

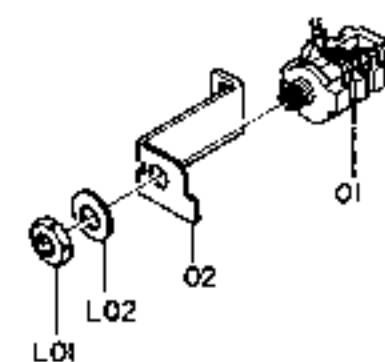


Fig. 5.7

5.8. Mechanism Ass'y ZX-9 (C02)

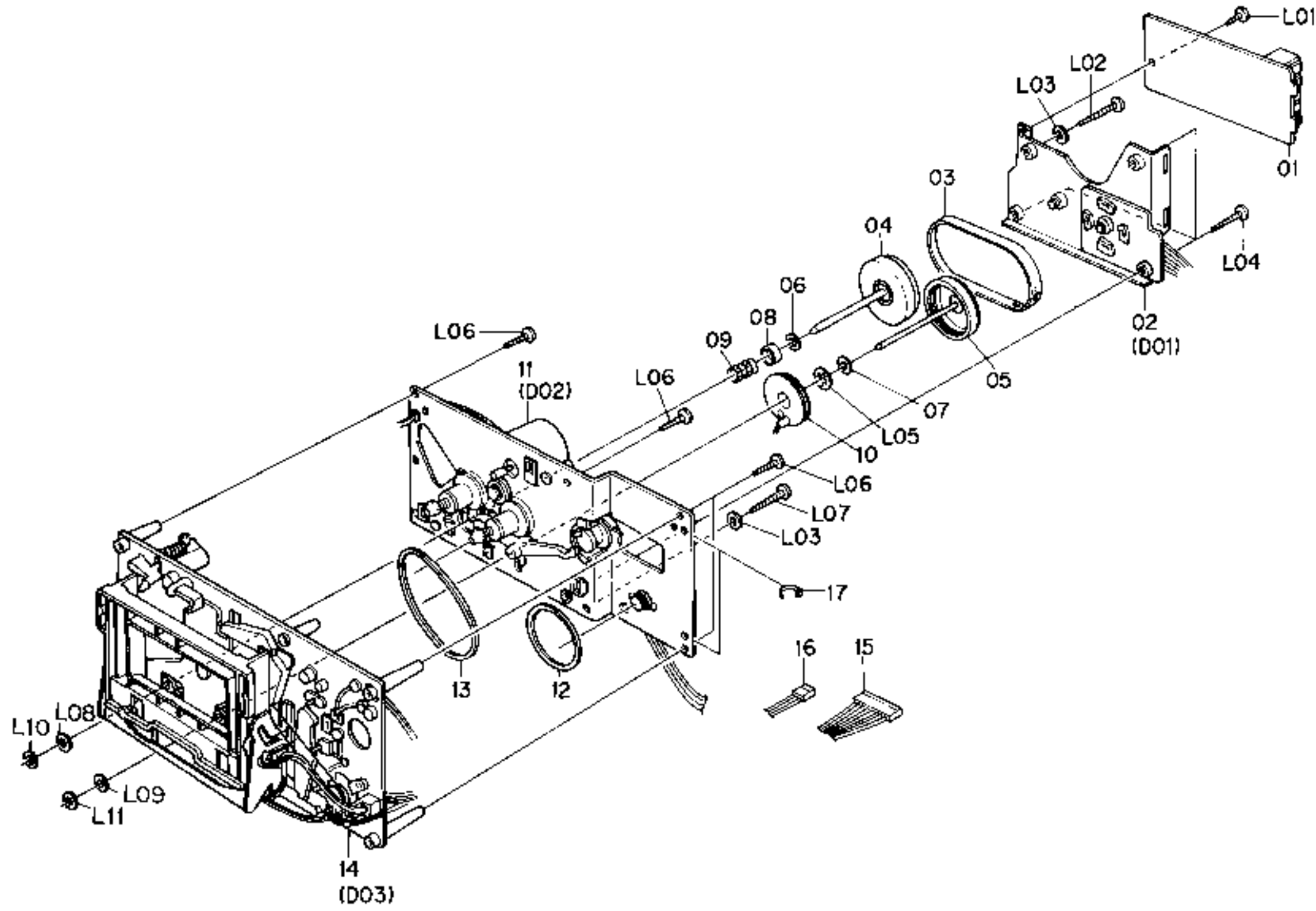


Fig. 5.8

Schematic Ref. No.	Part No.	Description	Q'ty
C02	CA08389A	Mechanism Ass'y ZX-9 Serial No.: A12501001 -	1
01	BA04777A	D/D Motor Control P.C.B. Ass'y	1
02	CA08384A	Flywheel Holder Ass'y	1
03	OC08334A	Capstan Belt	1
04	CA08380B	Supply Flywheel Ass'y	1
05	CA08390B	Take-up Flywheel Ass'y	1
06	OC08021B	Thrust Washer 3.1mm	1
07	OC08020B	Thrust Washer 2.6mm	1
08	OC08243A	Flange Thrust Cap	1
09	OC08244A	Flange Thrust Spring	1
10	CA08391A	Sensor Coil Sub Ass'y	1
11	CA08343A	Sub Mechanism Chassis Ass'y	1
12	OC08099B	Control Motor Belt	1
13	OC08098B	Counter Belt B	1
14	CA08385A	Main Mechanism Chassis Ass'y	1
15	OB08943B	9P-H Connector	1
16	OB08672A	3P-H Connector	1
17	OB08515A	Insu-Lock	10
-	OM04388A	Mechanism Serial No. Seal	1
L01	OE00857A	BT M3x6 ⊕ Binding	1
L02	OE00834A	BT M3x30 ⊕ Pan	1
L03	OE00178A	Washer 3mm	2
L04	OE00833A	BT M3x20 ⊕ Pan	3
L05	OE03023A	Stopper Ring CS 8mm	1
L06	OE00883A	BT M3x18 ⊕ Pan	5
L07	OE00835A	BT M3x25 ⊕ Pan	1
L08	OC08347A	Washer 3.1 mm FT	1
L09	OC08348A	Washer 2.6 mm FT	1
L10	OC08345A	Capstan Washer 3 mm	1
L11	OC08346A	Capstan Washer 2.5 mm	1

5.9. Rear Panel Ass'y (C03)

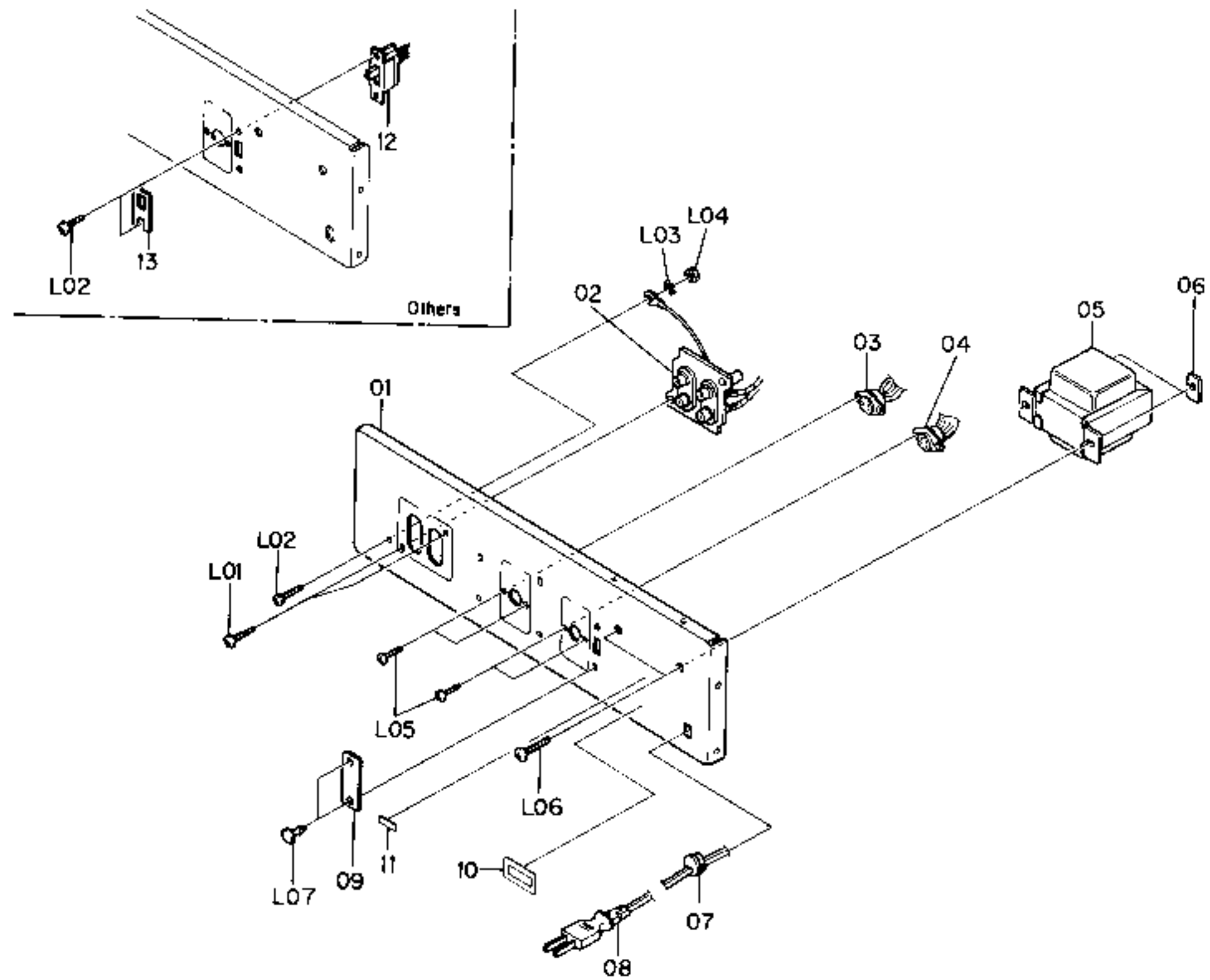


Fig. 5.9

5.10. Flywheel Holder Ass'y (D01)

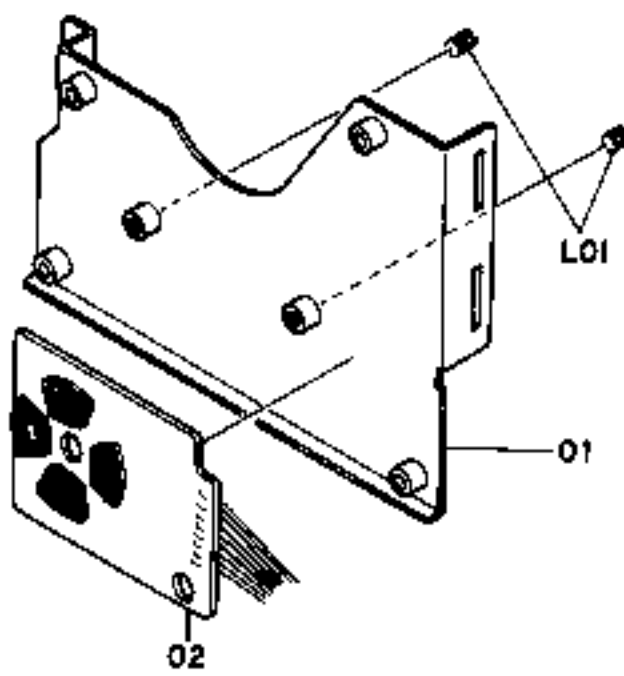


Fig. 5.10

5.11. Sub Mechanism Chassis Ass'y (D02)

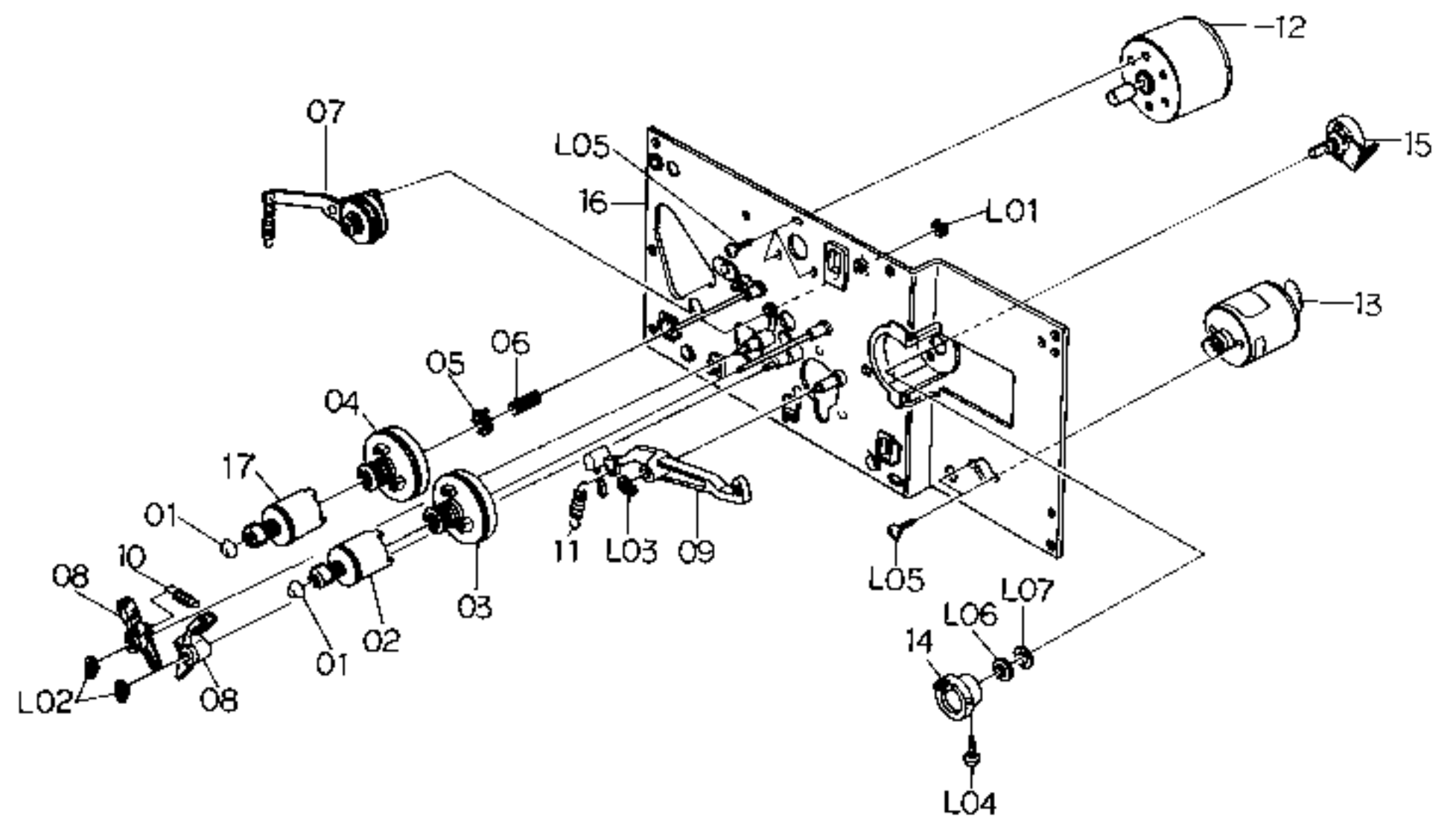


Fig. 5.11

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
C03	HA04327A	Rear Panel Ass'y (U.S.A. & Canada)	1	L04	OE00859A	BT M2.6x6 ⊕ Binding	1
	HA04323A	Rear Panel Ass'y (Japan)	1	L05	OE00226A	M2.6x4 ⊕ Pan	5
	HA04324A	Rear Panel Ass'y (Others)	1	L06	—	Volume Nut	(1)
	HA04322A	Rear Panel Ass'y (UK)	1	L07	—	Volume Washer	(1)
	HA04326A	Rear Panel Ass'y (220V Class 2)	1				
	HA04325A	Rear Panel Ass'y (Australia) Serial No.: A12501001 -	1				
01	OH04100A	Rear Panel	1				
02	BA04785A	Pin Jack P.C.B. Ass'y	1				
03	BA04595A	4P DIN Socket Ass'y	1				
04	BA04596A	8P DIN Socket Ass'y	1				
05	OB06695A	Power Transformer (U.S.A. & Canada)	1				
	OB06693A	Power Transformer (Japan)	1				
	OB06694A	Power Transformer (Others)	1				
	OB06692A	Power Transformer (UK, Australia & 220V Class 2)	1				
06	OC01162B	Bolt Receptacle Plate	2				
07	OB08037U	Cord Bushing C (U.S.A., Canada, Japan, 220V Class 2, Australia & Others)	1				
	OB08351A	Cord Bushing 4K-4 (UK)	1				
08	OB08533A	Power Cord (U.S.A., Canada & Others)	1				
	OB08219B	Power Cord (Japan)	1				
	OB08348A	Power Cord (UK)	1				
	OB08093U	Power Cord (220V Class 2)	1				
	OB05241A	Power Cord (Australia)	1				
09	OJ04601A	Switch Cover (U.S.A., Canada, Japan, 220V Class 2, UK & Australia)	1				
10	OM03551B	Pass Label	1				
11	OM03797A	Voltage Label 240V (UK & Australia)	1				
	OM03796A	Voltage Label 220V (220V Class 2)	1				
	OM04293A	Voltage Label 120V/220-240V (Others)	1				
12	OB07092U	Voltage Selector (Others)	1				
13	OM03946A	Voltage Selector Lock Plate C (Others)	1				
L01	OE00921A	BT M3x8 ⊕ Binding (Black Chromate)	2				
*L02	OE00594A	M3x8 ⊕ Binding (Bronze)	3				
L03	OE00172A	Washer 3mm Toothed Lock	1				
L04	OE00507A	Nut Hex. M3	1				
L05	OE00714A	M2.6x6 ⊕ Binding (Bronze)	4				
L06	OE00953A	M4x10 ⊕ Binding Head (Black Chromate)	2				
L07	OB08583A	Plastic Rivet	2				
—	OJ03644A	Chobert Rivet	2				
—	OM04387A	Serial Number Plate	1				
—	OF01071A	Free-up Belt (UK, Australia & 220V Class 2)	1				
—	OM04185A	Fuse Mark Label (220V Class 2)	1				
—	OM04113A	LA Label (U.S.A. & Canada)	1				
		*: Depends on the versions.					
D01	CA08384A	Flywheel Holder Ass'y Serial No.: A12501001 -	1				
01	CA08382A	Flywheel Holder Sub Ass'y	1				
02	BA04759A	Motor P.C.B. Ass'y	1				
L01	OC08329A	Thrust Screw	2				
D02	CA08343A	Sub Mechanism Chassis Ass'y Serial No.: A12501001 -	1				
01	OC08039B	Reel Hub Head	2				
02	CA08038B	Reel Hub B Pulley Ass'y	1				
03	CA08037A	Reel Hub Take-up Ass'y	1				
04	CA08064A	Reel Hub Supply Ass'y	1				
05	CA08039A	Back Tension Ass'y	1				
06	OC08269A	Back Tension Spring C	1				
07	CA08193A	Idler Ass'y	1				
08	CA08042A	Brake Ass'y	2				
09	OC08030C	Brake Drive Arm	1				
10	OC08129A	Brake Arm Spring	1				
11	OC08128A	Brake Drive Arm Spring	1				
12	CA08242A	Reel Motor Ass'y	1				
13	CA08034A	Control Motor Ass'y	1				
14	OC08053B	Volume Coupler	1				
15	OB07240A	Volume Control 10K (B)	1				
16	CA08194A	Sub Chassis Ass'y	1				
17	CA08397A	Reel Hub S Pulley Ass'y	1				
L01	OE00698A	E-Ring 2.5 mm	1				
L02	OE00837A	Stopper Ring 3mm	2				
L03	OE00838A	Stopper Ring 4mm	1				

5.12. Main Mechanism Chassis Ass'y (D03)

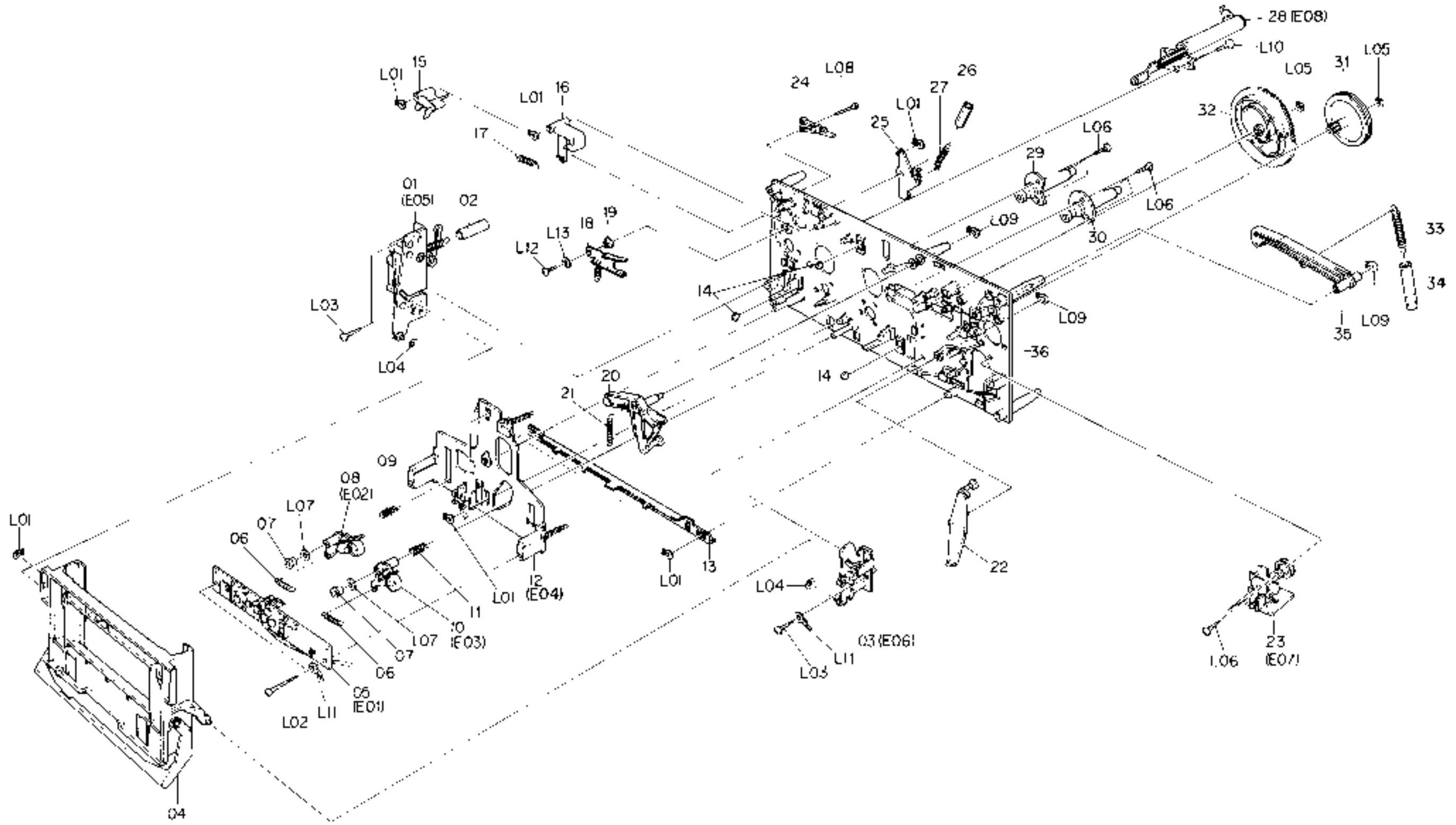


Fig. 5.12

5.13. Head Mount Base Ass'y (E01)

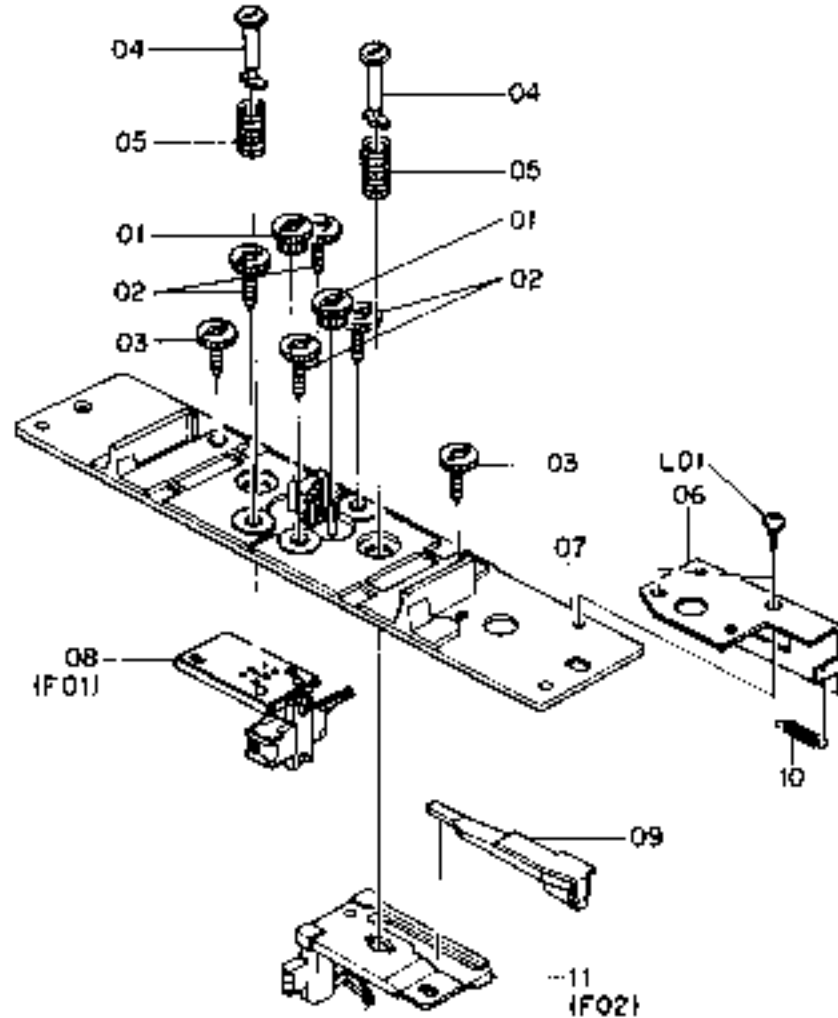


Fig. 5.13

5.14. Supply Pressure Roller Ass'y (E02)

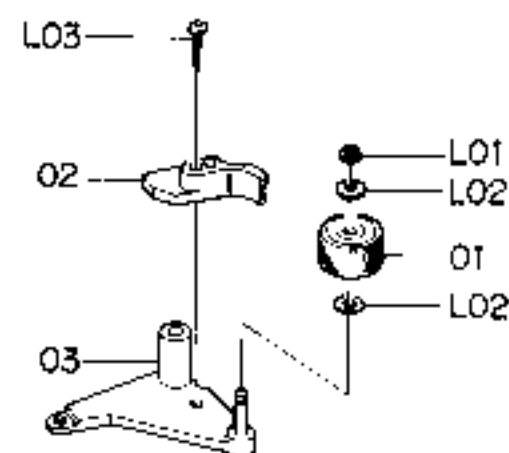


Fig. 5.14

5.15. Take-up Pressure Roller Ass'y (E03)

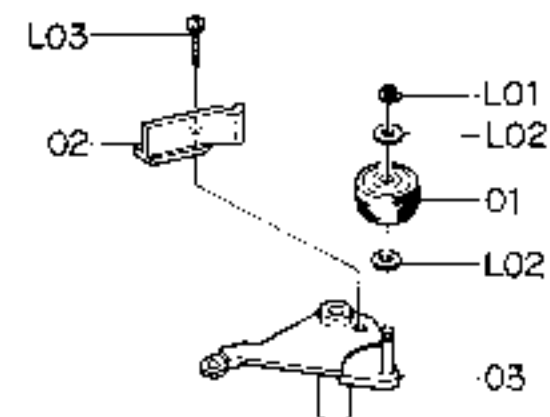


Fig. 5.15

5.16. Head Base Ass'y (E04)

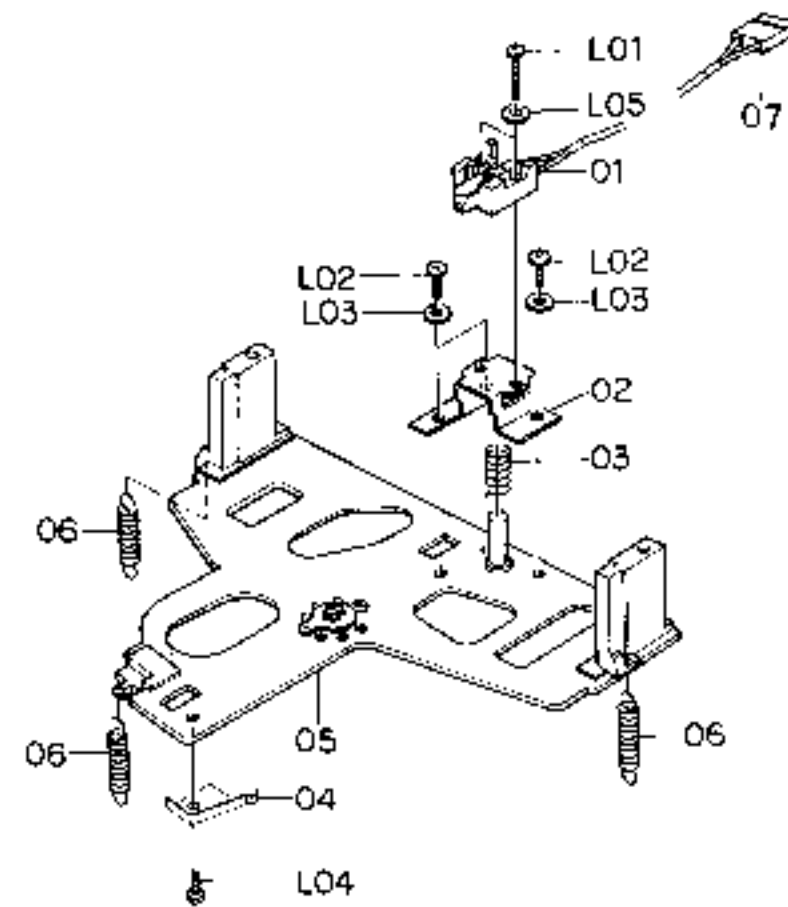


Fig. 5.16

5.17. Cassette Case Holder L Ass'y (E05)

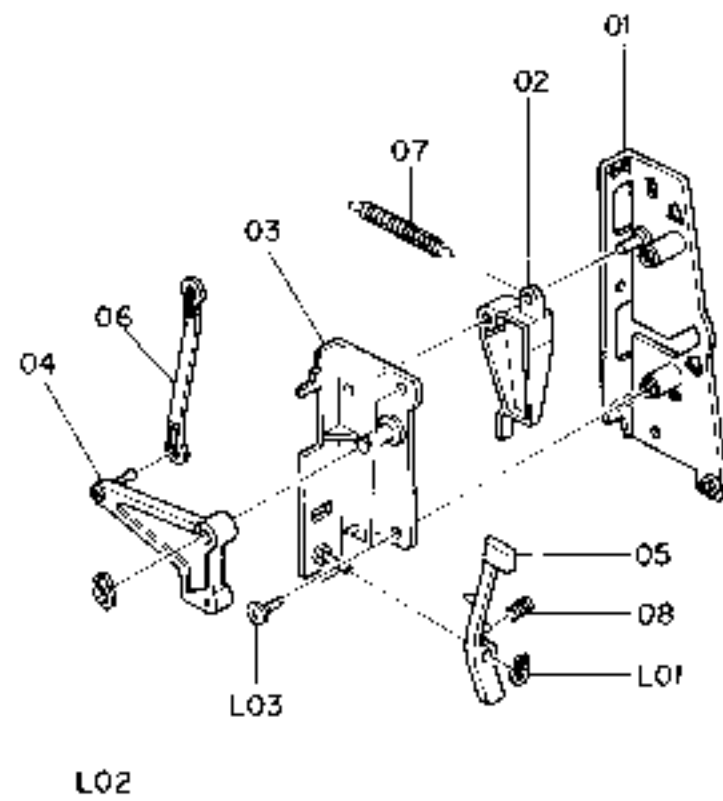


Fig. 5.17

5.18. Cassette Case Holder R Ass'y (E06)

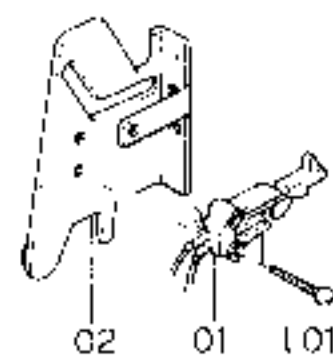


Fig. 5.18

5.19. Auto Shut-off Ass'y (E07)

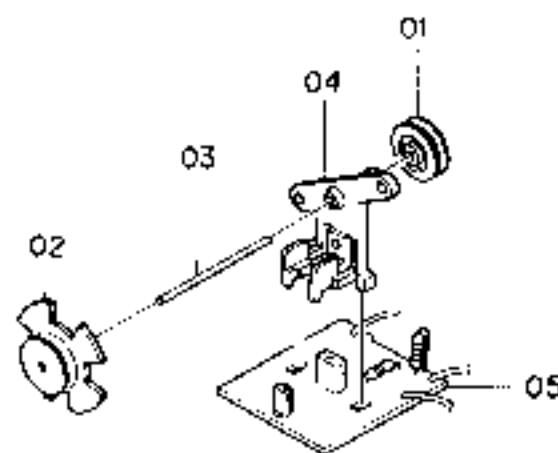


Fig. 5.19

Schematic Ref. No.	Part No.	Description	Q'ty
D03	CA08385A	Main Mechanism Chassis Ass'y Serial No.: A12501001 -	1
01	CA08350A	Cassette Case Holder L Ass'y	1
02	0C08151A	Lid Arm Spring Tube	1
03	CA08022A	Cassette Case Holder R Ass'y	1
04	CA08349A	Cassette Case Ass'y	1
05	CA08345A	Head Mount Base Ass'y	1
06	0C08121A	Supply Pressure Roller Spring	2
07	0C08313A	Pressure Roller Arm Bushing	2
08	CA08053B	Supply Pressure Roller Ass'y	1
09	0C08122B	Supply Pressure Roller Thrust Spring	1
10	CA08079B	Take-up Pressure Roller Ass'y	1
11	0C08183B	Take-up Pressure Roller Thrust Spring	1
12	CA08339A	Head Base Ass'y	1
13	0C08182A	Pressure Roller Drive Bar B	1
14	0C08086B	Head Base Roller	3
15	0C08050B	Record Sensor	1
16	0C08051E	Cassette Hold Arm	1
17	0C08120A	Cassette Hold Arm Spring	1
18	CA08196A	Back Tension Ass'y	1
19	0C08254A	Back Tension Arm Collar	1
20	CA08027A	Head Base Drive Arm Ass'y	1
21	0C08143C	Head Base Drive Arm Spring	1
22	CA08026A	Pressure Roller Drive Arm Ass'y	1
23	CA08396A	Auto Shut-off Ass'y	1
24	0C08119A	Record Protector	1
25	0C08194C	Damper Lock Arm	1
26	0C08153A	Damper Lock Arm Spring Tube	1
27	0C08116A	Record Arm Spring	1
28	CA08030A	Pneumatic Damper Ass'y	1
29	CA08388B	Supply Capstan Flange Ass'y	1
30	CA08383B	Take-up Capstan Flange Ass'y	1
31	0C08186A	Cam Drive Gear	1
32	0C08029H	Control Cam	1
33	0C08117A	Counter-Load Arm Spring	1
34	0C08152A	Counter-Load Arm Spring Tube	1
35	CA08028A	Counter-Load Arm Ass'y	1
36	CA08347A	Main Chassis Ass'y	1
L01	0E00837A	Stopper Ring 3mm	9
L02	0E00834A	BT M3x30 ⊕ Pan	2
L03	0E00831A	BT M3x10 ⊕ Pan	3
L04	0E00254A	Washer 3.1mm	2
L05	0E00222A	E-Ring 2mm	2
L06	0E00876A	BT M2.6x8 ⊕ Pan	8
L07	0E00178A	Washer 3mm	2
L08	0E00879A	BT M2x15 ⊕ Pan	1
L09	0E00838A	Stopper Ring 4mm	3
L10	0E00846A	BT M3x8 ⊕ Pan	3
L11	0E00895A	Earth Lug 3mm	2
L12	0E00859A	BT M2.6x6 ⊕ Binding	1
L13	0C08255A	Washer 2.6mm	1
E01	CA08345A	Head Mount Base Ass'y Serial No.: A12501001 -	1
01	0C08028C	Head Height Adjustment Gear	2
02	0C08027F	Head Height Adjustment Screw	4
03	0C08026D	Azimuth Alignment Screw	2
04	0C08161B	Spring Stopper	2
05	0C08187B	Head Plate Spring	2
06	0C08315A	Azimuth Alignment Wire Hold Plate	1
07	CA08083D	Head Mount Base Sub Ass'y	1
08	CA08341A	P-8L Playback Head Ass'y	1
09	0C08316A	Azimuth Alignment Plate	1
10	0C08317A	Azimuth Spring	1
11	CA08340A	R-8L Record Head Ass'y	1
L01	0E00917A	BT M2.6x5 ⊕ Pan	2
E02	CA08053B	Supply Pressure Roller Ass'y Serial No.: A12501001 -	1
01	0C08164G	Pressure Roller	1
02	0C08189C	Supply Tape Guide	1
03	CA08061A	Supply Pressure Roller Arm Ass'y	1
L01	0E00042A	E-Ring 1.5mm	1
L02	0C08024A	Washer 2mm	2
L03	0E00788A	BT M2x8 ⊕ Pan (Black Chromate)	1
E03	CA08079B	Take-up Pressure Roller Ass'y Serial No.: A12501001 -	1
01	0C08164G	Pressure Roller	1
02	0C08181C	Take-up Tape Guide	1
03	CA08073B	Take-up Pressure Roller Arm Ass'y	1
L01	0E00042A	E-Ring 1.5mm	1
L02	0C08024A	Washer 2mm	2
L03	0E00788A	BT M2x8 ⊕ Pan (Black Chromate)	1
E04	CA08339A	Head Base Ass'y Serial No.: A12501001 -	1
01	GA02103A	EOK Erase Head	1
02	0C08158D	Erase Head Hold Plate	1
03	0C08166A	Erase Head Hold Plate Spring	1
04	0C08174D	Cassette Hold Spring	1
05	CA08003R	Head Base Ass'y	1
06	0C08175A	Head Base L Spring	3
07	0B08944A	2P-H Connector	1
L01	0E00951A	M1.7x7 ⊕ Pan (Black Chromate)	2
L02	0E00909A	M2x6 ⊕ Pan	3
L03	0E00117A	Washer 2mm	3
L04	0E00853A	BT M2x3 ⊕ Pan	1
L05	0E00952A	Washer 1.7mm	2
E05	CA08350A	Cassette Case Holder L Ass'y Serial No.: A12501001 -	1
01	CA08326A	Cassette Case Holder L Sub Ass'y	1
02	0C08073C	Lid Arm A	1
03	0C08306A	Eject Arm Holder	1
04	0C08307A	Eject Arm A	1
05	0C08197C	Eject Arm B	1
06	0C08199B	Eject Arm Joint	1
07	0C08114A	Lid Arm Spring	1
08	0C08211C	Eject Arm Spring	1
L01	0E00837A	Stopper Ring 3mm	1
L02	0E00838A	Stopper Ring 4mm	1
L03	0E00865A	BT M3x10 ⊕ Binding	2
E06	CA08022A	Cassette Case Holder R Ass'y Serial No.: A12501001 -	1
01	0C08133A	Eject Sensor	1
02	CA08044A	Cassette Case Holder R Sub Ass'y	1
L01	0E00840A	BT M2x8 ⊕ Pan	2
E07	CA08396A	Auto Shut-off Ass'y Serial No.: A12501001 -	1
01	0C08047A	Shut-off Pulley A	1
02	0C08309B	Shut-off Pulley B	1
03	0C08088B	Shut-off Pulley Shaft	1
04	0C08207B	Shut-off Pulley Holder	1
05	BA04852A	Shut-off P.C.B. Ass'y	1

5.20. Pneumatic Damper Ass'y (E08)

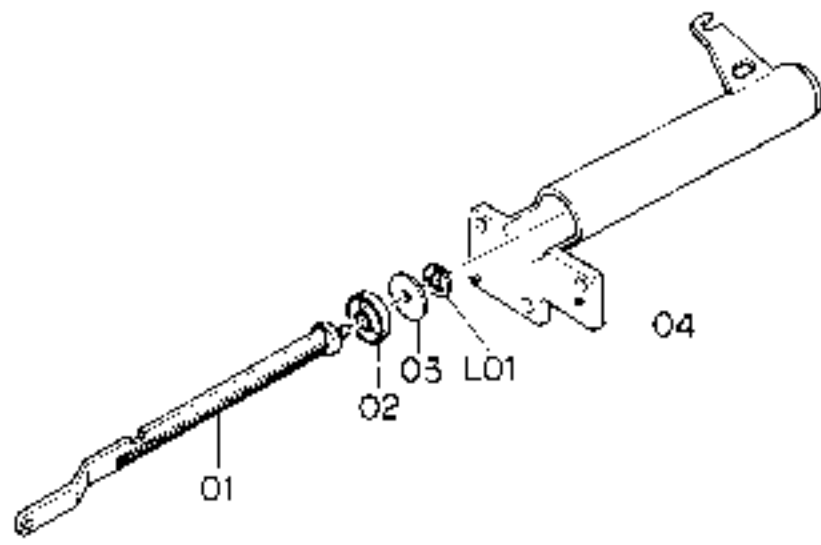


Fig. 5.20

5.21. P-8L Playback Head Ass'y (F01)

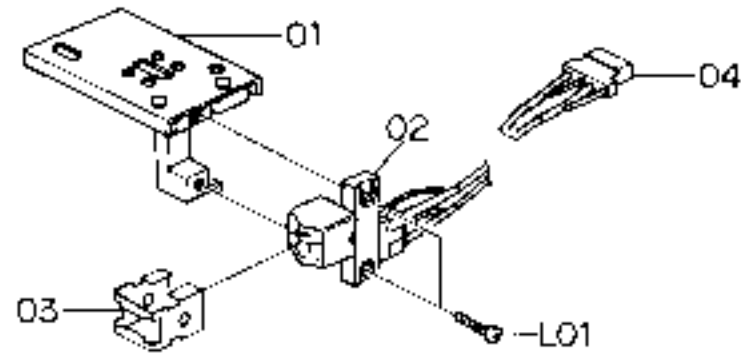


Fig. 5.21

5.22. R-8L Record Head Ass'y (F02)

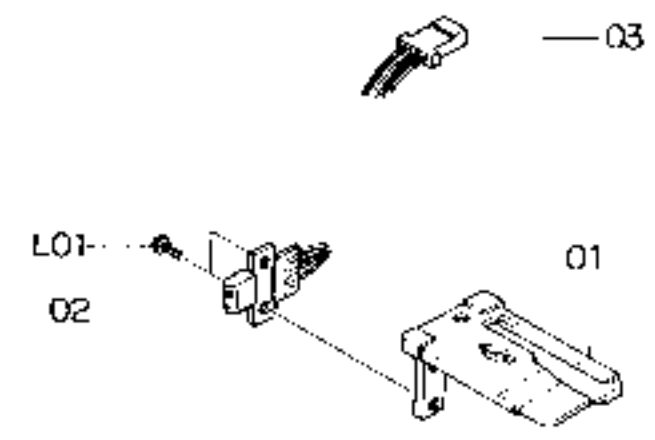


Fig. 5.22

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
E08	CA08030A	Pneumatic Damper Ass'y Serial No.: A12501001 -	1	03	0C08169D	Pad Lifter 54	1
01	0C08058C	Damper Piston	1	04	0B08946A	4P-H Connector	1
02	0C08102C	Damper Ring	1	L01	0E00886A	M1.7x6.5 ⊕ Pan	2
03	0C08010C	Damper Plate	1	F02	CA08340A	R-8L Record Head Ass'y Serial No.: A12501001 -	1
04	0C08059D	Sylinder	1	01	0C08234B	Record Head Plate	1
L01	0E00874A	Stopper Ring CS 2mm	1	02	GA01050A	R-8LH Record Head	1
F01	CA08341A	P-8L Playback Head Ass'y Serial No.: A12501001 -	1	03	0B02274A	4P-H Connector RED	1
01	CA08307A	Playback Head Plate Ass'y	1	L01	0E00887A	M1.7x4 ⊕ Pan	2
02	GA02034A	P-8LH Playback Head	1				

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
SW1 SW1 SW1 M2 M2 M2	BA04618A	Power Switch P.C.B. Ass'y (U.S.A. & Canada)	LED601-609 CN10 VR001,002 VR003 IC601 X601 R612 C601,602 C603 CN14 CN16 FC601 FC602 Q601,602 603,604 LED601 R601,602 603,604 R605-611 SW601	BA04545A	Record Cal. LED P.C.B. Ass'y	Q405 R604 R605 PL407	BA04852A	Shut-off P.C.B. Ass'y
	BA04594A	Power Switch P.C.B. Ass'y (Japan)		0B02509D	Record Cal. LED P.C.B.		0B07839B	Shut-off P.C.B.
	BA04620A	Power Switch P.C.B. Ass'y (UK, Australia, 220V Class 2 & Others)		0B06333A	LED RED TLR124A		0B06228A	Photo TR PH104
	0B08956C	Power Switch P.C.B.		0B08923B	6P-H Connector		0B05615A	RK 22K 1/4W J
	0B07407A	Power Switch (U.S.A. & Canada)		BA04546A	Volume P.C.B. Ass'y		0B09215A	RF 100 1/4W J
	0B07406A	Power Switch (Japan)		0B02510A	Volume P.C.B.		0B08552A	Lamp 12V 25mA
	0B07408A	Power Switch (UK, Australia, 220V Class 2 & Others)		0B07202A	VR 100K (A)			
	0B08342A	Spark Killer (U.S.A. & Canada)		0B07204A	VR 10K (A) x 2			
	0B08363A	Spark Killer (Japan)		BA04642A	Counter Control P.C.B. Ass'y			
	0B08955A	Spark Killer (UK, Australia, 220V Class 2 & Others)		0B02514A	Counter Control P.C.B.			
	0E00622A	M3x5 ⊕ Pan (2A)		0B06320A	IC LM6402A-048			
	0E00752A	Eyelet 2x3 (2)		0B08908A	Xtal KBR400BT			
	0J04475A	Power Switch Holder (2)		0B09749A	RK 1M 1/6W J			
	0J04555A	Power Switch Insulator (1)		0B05879A	CC 220P 50V K			
				0B01836A	CE 47μ 10V			
		0B08939B	7P-H Connector					
		0B08940B	11P-H Connector					
		0B05265A	7P Flat Cable					
		0B05262A	6P Flat Cable					
		BA04548A	Counter P.C.B. Ass'y					
		0B02513B	Counter P.C.B.					
		0B06319A	TR 2SA608SP					
		0B06326A	Counter LED					
		0B05629A	SL1405 20					
		0B01933A	RK 2.7K 1/4W J					
		0B07219A	RK 220 1/4W J (7)					
			Switch AKC8S					

6. MOUNTING DIAGRAMS AND PARTS LIST

Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.

2. Diode is 1S553, 1S953, or 1S1555 unless otherwise specified.

3. Abbreviation for part name:

TR — Transistor, SiD — Silicon Diode, GD — Germanium Diode, ZD — Zener Diode

RK — Carbon Resistor, RM — Metal Film Resistor, RF — Fail Safe Type Resistor, RC — Cement Resistor

CE — Electrolytic Capacitor, CM — Mylar Capacitor, CC — Ceramic Capacitor, CP — PP Capacitor,

CT — Tantalum Capacitor, C — Mica Capacitor

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

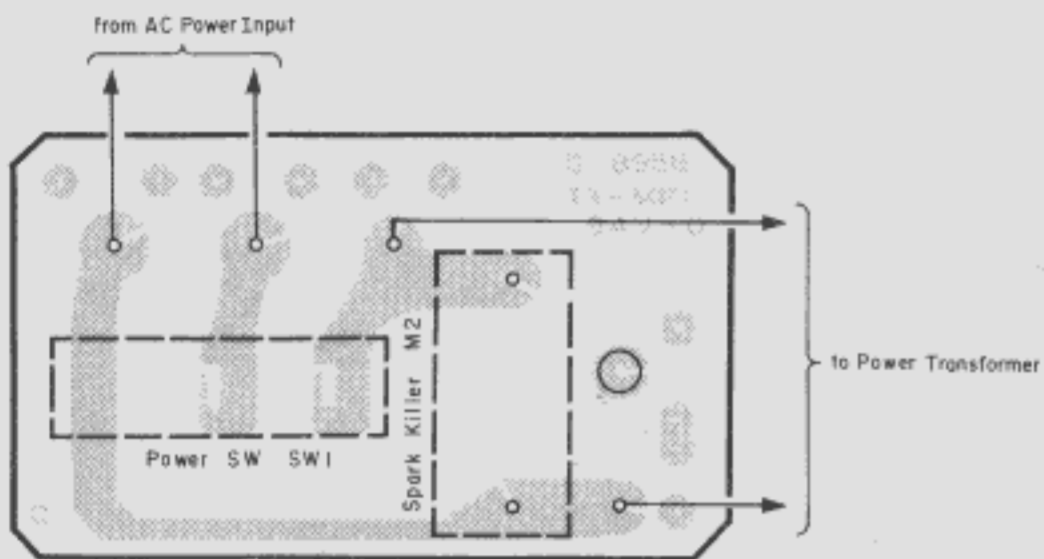


Fig. 6.1

6.2. Azimuth Switch P.C.B. Ass'y

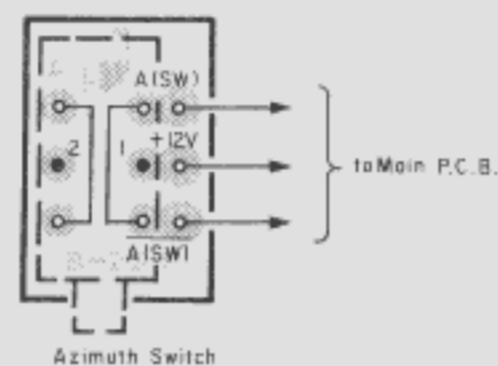


Fig. 6.2

6.3. Record Cal. LED P.C.B. Ass'y

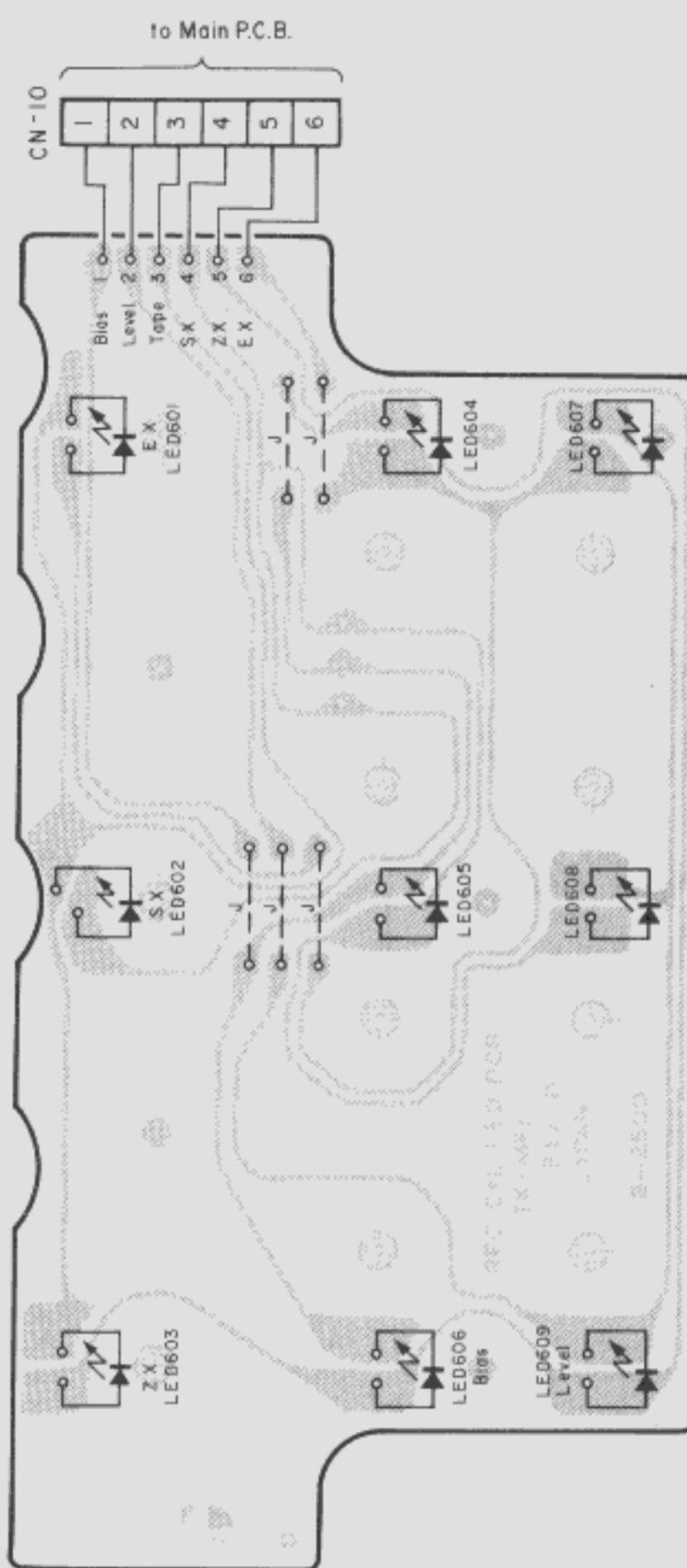


Fig. 6.3

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

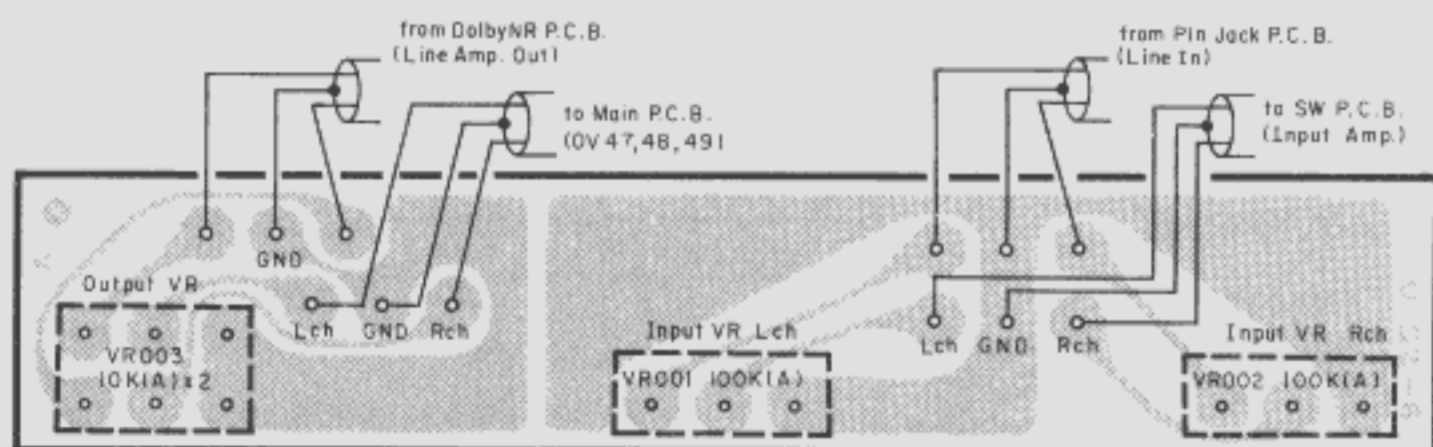


Fig. 6.4

6.5. Counter Control P.C.B. Ass'y

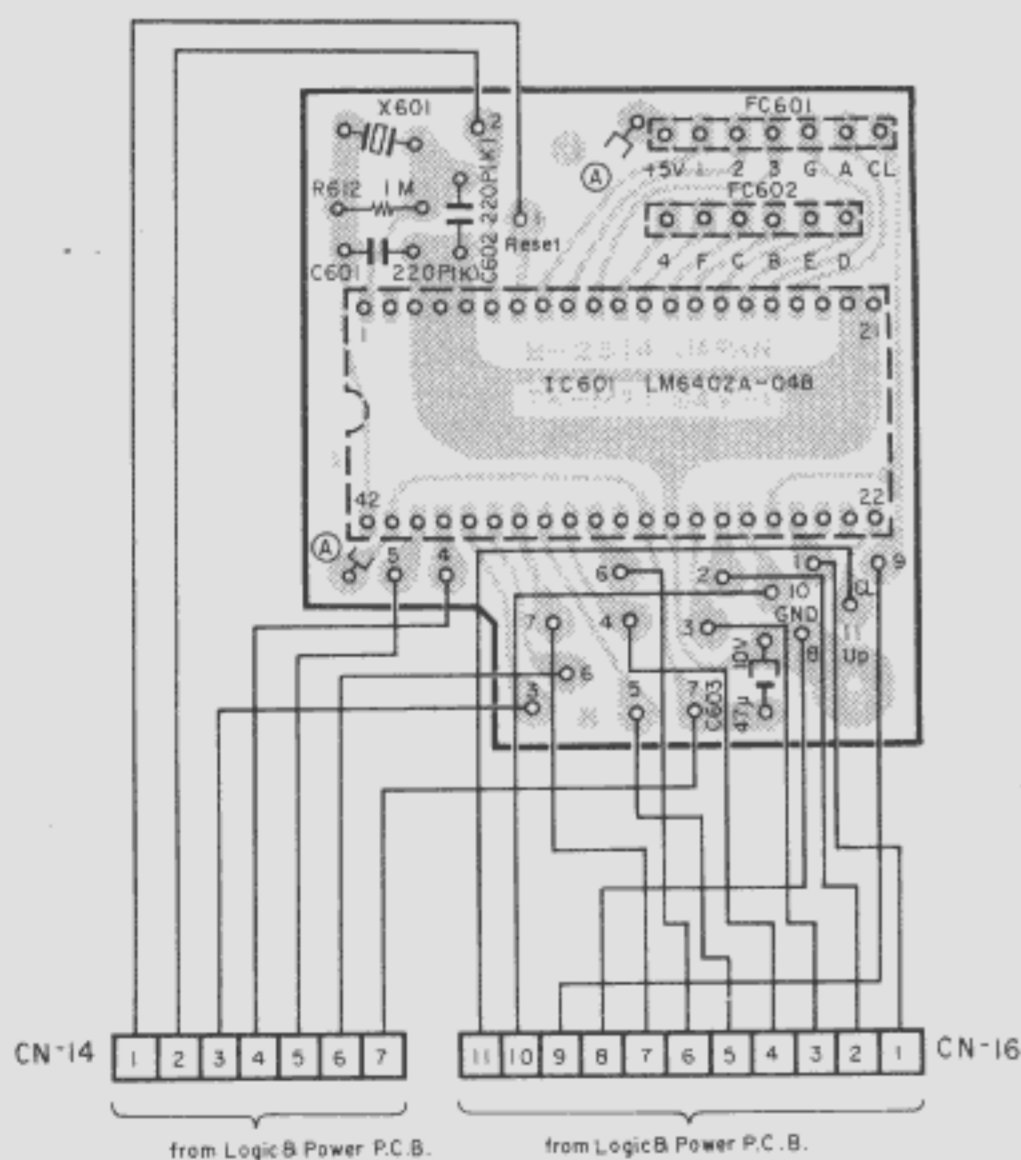


Fig. 6.5

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

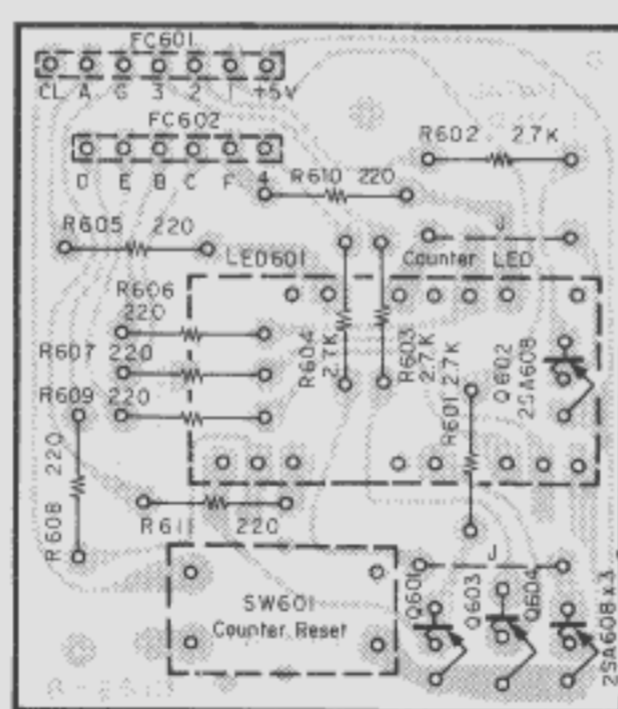


Fig. 6.6

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

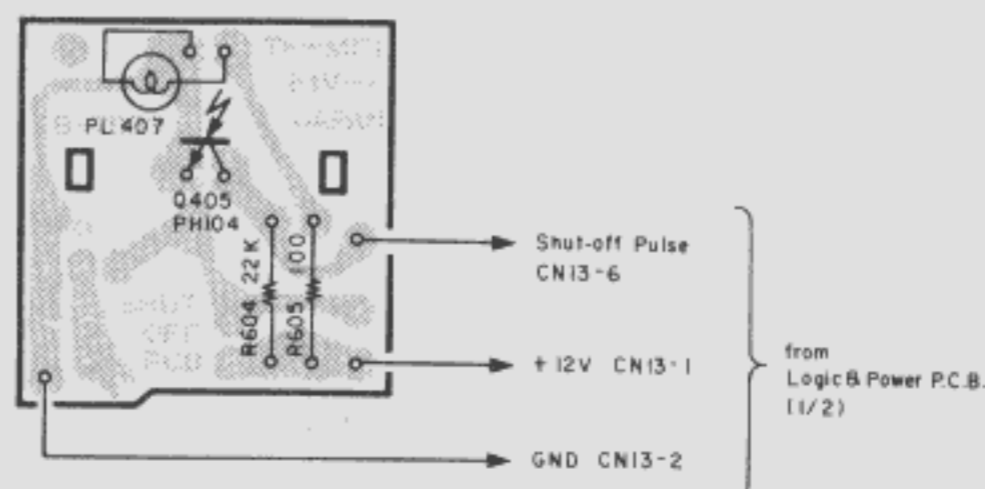


Fig. 6.7

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

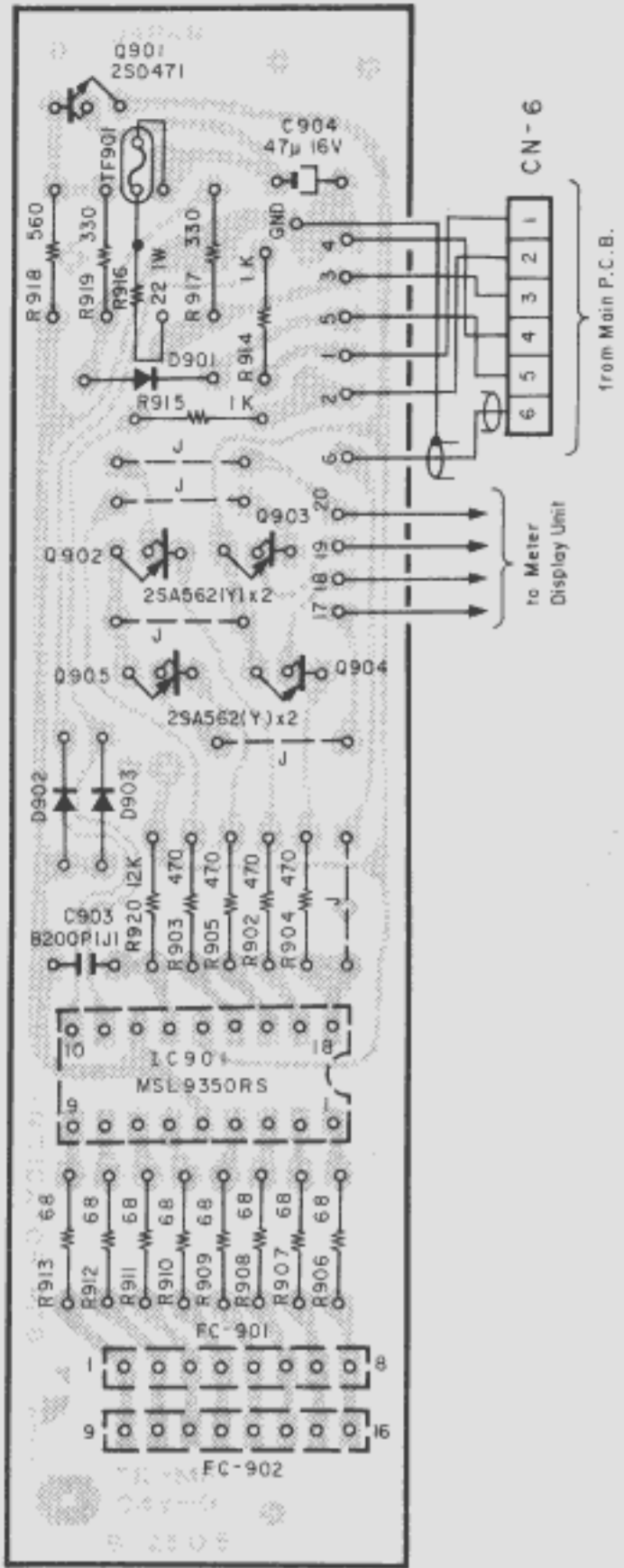


Fig. 6.8

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

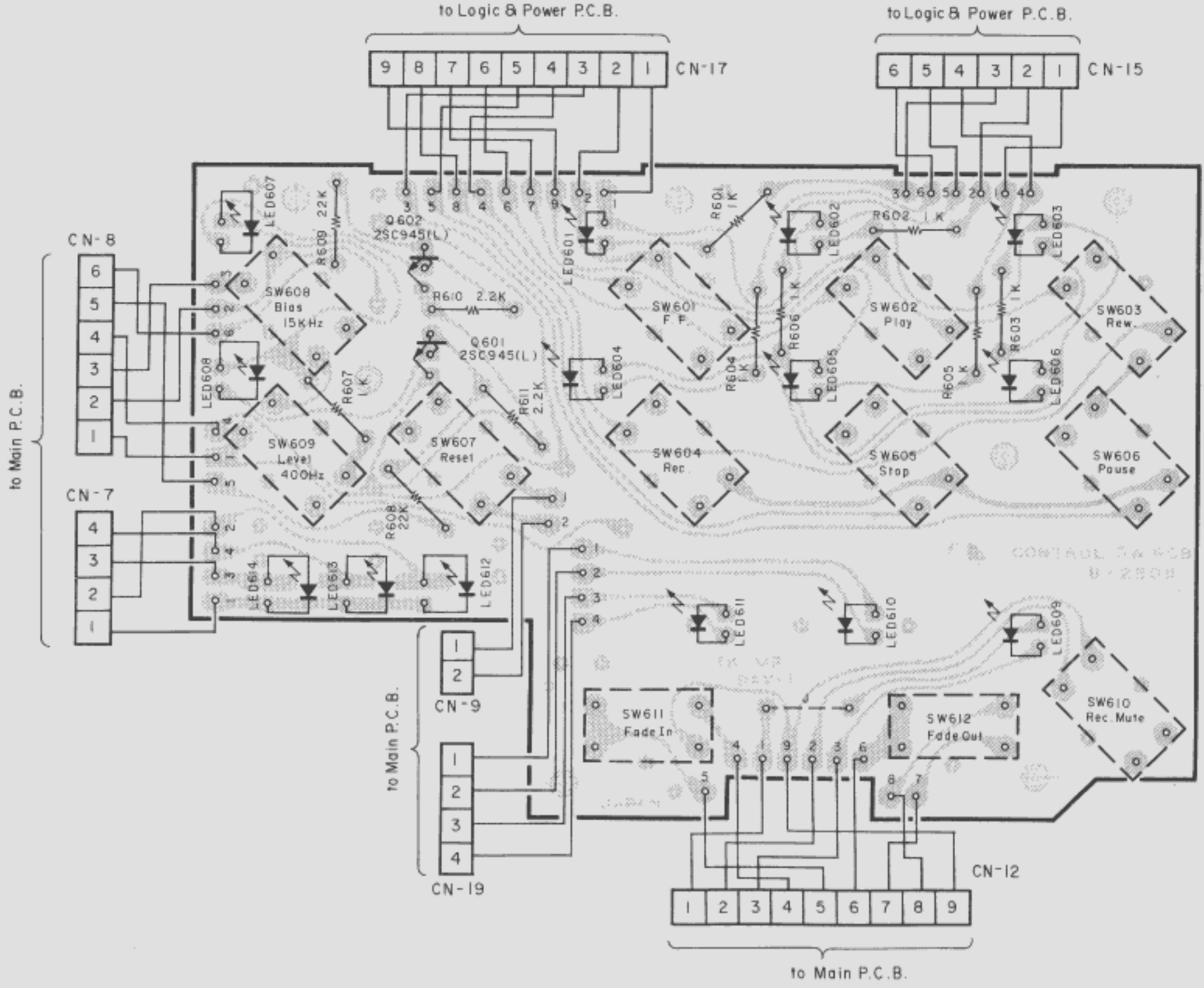


Fig. 6.9

6.10. Switch P.C.B. Ass'y

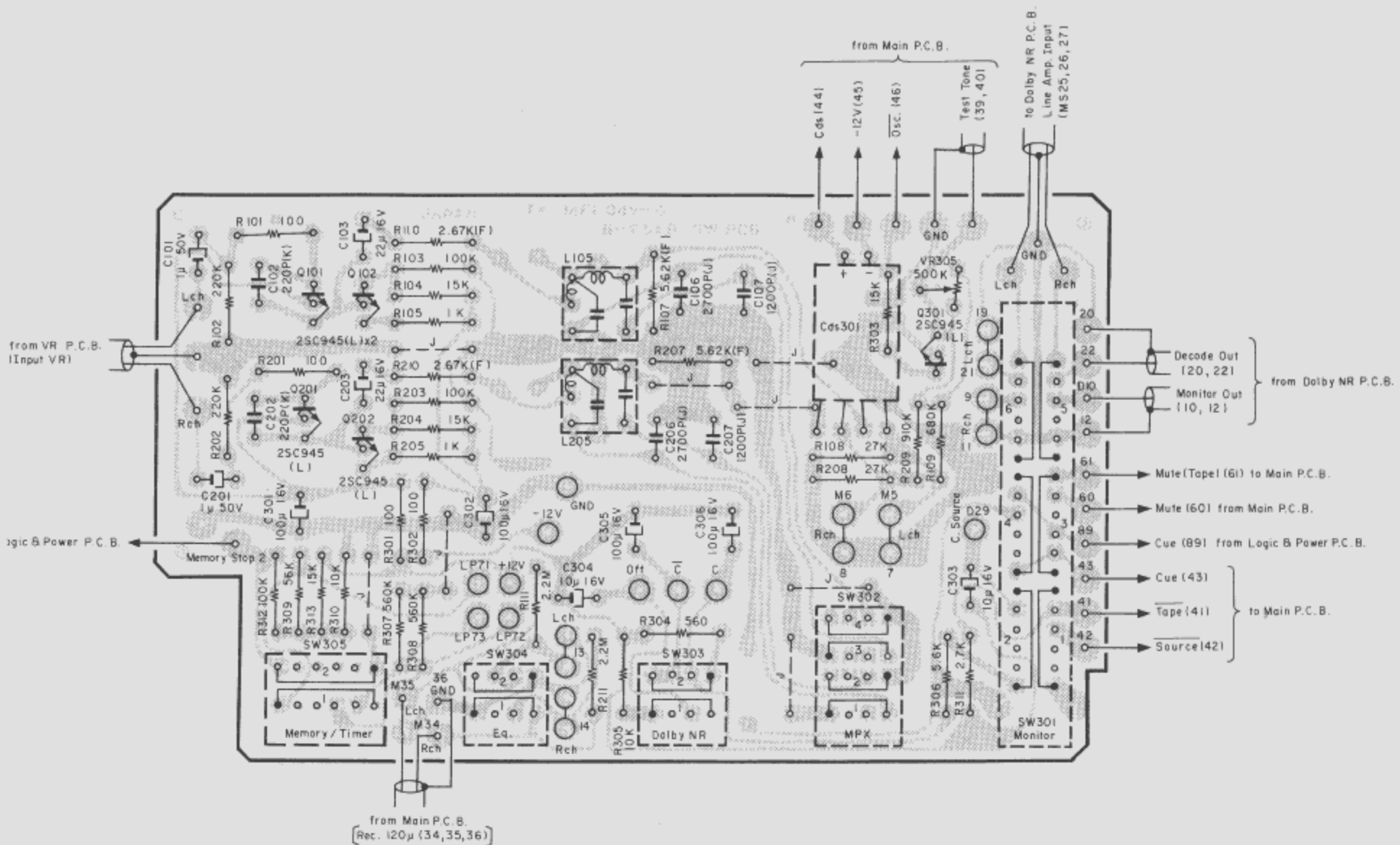


Fig. 6.10

6.11. Record Cal. P.C.B. Ass'y

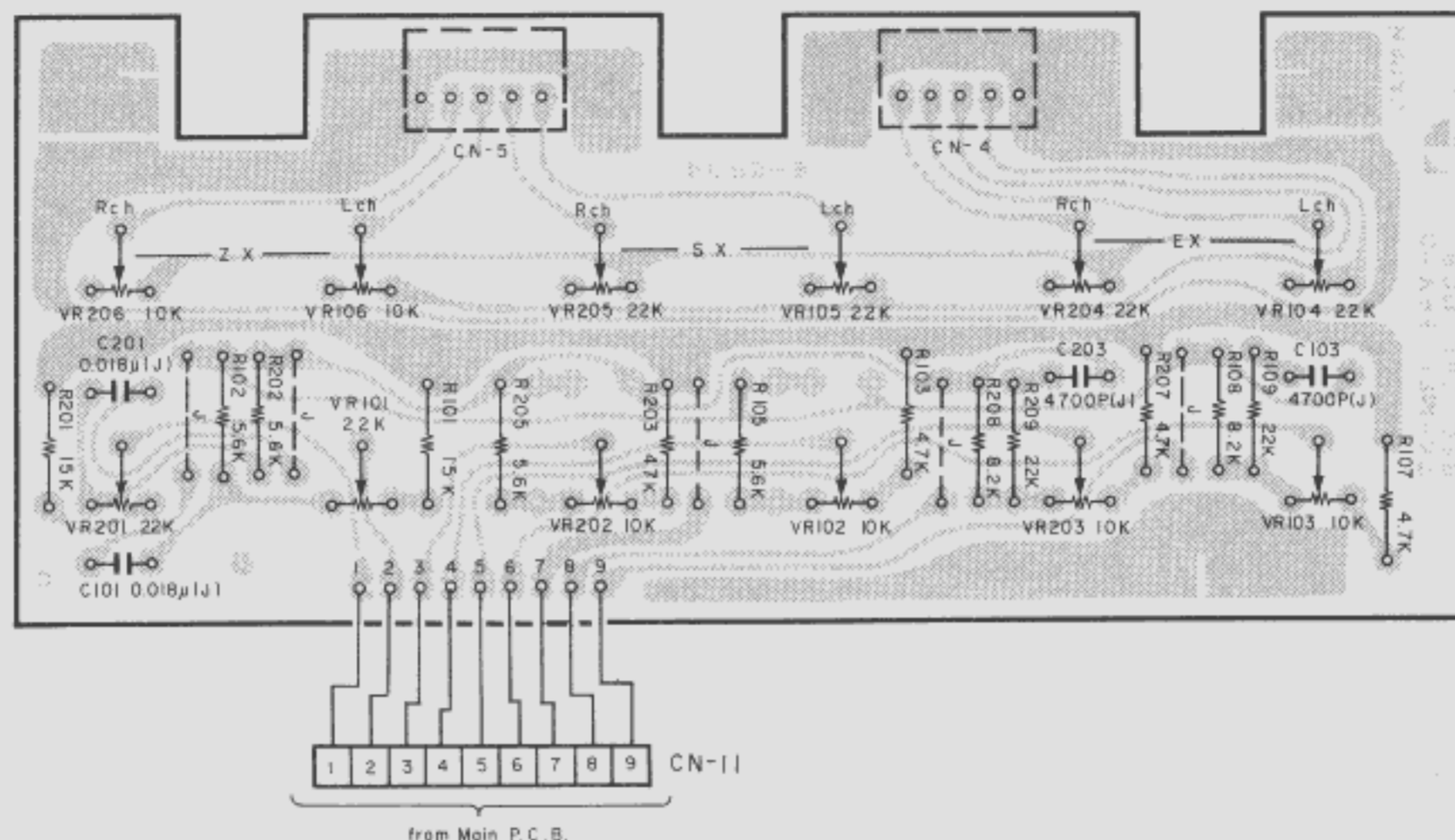


Fig. 6.11

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04543A	Indicator P.C.B. Ass'y		OJ04580A OJ04534B	P.C.B. Himelon (1) Fader House (1)		BA04542A	Record Cal. P.C.B. Ass'y
IC901	OB02505D	Indicator P.C.B.		BA04770A	Switch P.C.B. Ass'y	VR101,104	OB02504D	Record Cal. P.C.B.
Q901	OB06284A	IC MSL9350RS		OB02549A	Switch P.C.B.	105,201	OB07277A	Semi-fixed VR 22K
Q902,903	OB06066A	TR 2SD471	Q101,102	OB01872A	TR 2SC945 (L)	204,205		
904,905	OB06202A	TR 2SA562 (Y)	201,202			VR102,103	OB07404A	Semi-fixed VR 10K
D901-903	OB01909A	SiD 1S1555	301	OB06325B	Photocoupler	106,202		
R902,903	OB05576A	RK 470 1/4W J	Cds301	OB06690A	MCD7214F	203,206	OB01683A	RK 15K 1/4W J
904,905	OB01704A	RK 68 1/4W J	L105,205	OB07330A	L-C Block	R101,201	OB01887A	RK 5.6K 1/4W J
R906-913	OB01857A	RK 1K 1/4W J	VR305	OB01679A	Semi-fixed VR 500K	R102,105		
R914,915	OB09378A	RF 22 1W J	R101,201	OB05625A	RK 100 1/4W J	202,205	OB01846A	RK 4.7K 1/4W J
R916	OB05577A	RK 330 1/4W J	R102,202	OB01889A	RK 220K 1/4W J	R103,107		
R917,919	OB05575A	RK 560 1/4W J	R103,203			203,207	OB01856A	RK 8.2K 1/4W J
R918	OB09263A	RK 12K 1/4W J	312	OB01683A	RK 15K 1/4W J	R108,208	OB05615A	RK 22K 1/4W J
R920	OB05814A	CM 8200P 50V J	R104,204			R109,209	OB05832A	CM 0.018μ 50V J
C903	OB01403A	CE 47μ 16V	303,313	OB01857A	RK 1K 1/4W J	C101,201	OB05652A	CM 4700P 50V J
C904	OB08715A	Thermal Fuse 129	R105,205	OB09427A	RM 5.62K 1/4W F	C103,203	OB08727A	5P-S Connector
F901	OB02276A	6P-H Connector RED	R107,207	OB05743A	RK 27K 1/4W J	CN4,5	OB08920B	9P-H Connector
CN6	OB05236A	8P Flat Cable (1)	R108,208	OB05868A	RK 680K 1/4W J	CN11	OE00612A	M3x6 ⊕ Pan (2A)
	OB05264A	Flat Cable (1)	R109	OB09421A	RM 2.67K 1/4W F			
	OB06336A	Meter Display (1)	R110,210	OB05671A	RK 2.2M 1/4W J		OJ04481B	Shield Case C (1)
			R111,211	OB05960A	RK 910K 1/4W J		OJ04483A	Record Cal. P.C.B. Holder (1)
			R209	OB09215A	RF 100 1/4W J			
	BA04544A	Control Switch P.C.B. Ass'y	R301,302	OB05575A	RK 560 1/4W J			
			R304	OB01888A	RK 10K 1/4W J			
	OB02508D	Control Switch P.C.B.	R305,310	OB01887A	RK 5.6K 1/4W J			
Q601,602	OB01872A	TR 2SC945 (L)	R306	OB05784A	RK 560K 1/4W J			
LED601	OB06334A	LED GRN TLR124A	R307,308	OB05508A	RK 56K 1/4W J			
602,603			R309	OB05629A	RK 2.7K 1/4W J			
605,606			R311	OB01405A	CE 1μ 50V			
612,614			C101,201	OB09283A	CC 220P 50V K			
LED604	OB06333A	LED RED TLR124A	C102,202	OB01862A	CE 22μ 16V			
607,608			C103,203	OB09189A	CM 2700P 50V J			
609,613			C106,206	OB05687A	CM 1200P 50V J			
LED610	OB06327A	LED	C107,207	OB01400A	CE 100μ 16V			
611			C301,302					
R601-607	OB01857A	RK 1K 1/4W J	305,306					
R608,609	OB05615A	RK 22K 1/4W J	C303,304	OB01412A	CE 10μ 16V			
R610,611	OB05622A	RK 2.2K 1/4W J	SW301	OB07393A	Rotary Switch 6-2NS			
SW601-610	OB07219A	Switch AKC8S	SW302	OB07428A	Rotary Switch 4-2S			
SW611,612	OB07396A	Double Action Switch KHF10901	SW303	OB07350A	Rotary Switch 2-3			
CN7	OB02273A	4P-H Connector BLU	SW304	OB07392A	Rotary Switch 2-2S			
CN8	OB02275A	6P-H Connector BLU	SW305	OB07391A	Rotary Switch 2-4NS			
CN9	OB02272A	2P-H Connector BLU		OB08515A	Insu-Lock (4)			
CN12	OB02279A	9P-H Connector BLU						
CN15	OB02277A	6P-H Connector GRN						
CN17	OB02278A	9P-H Connector GRN						
CN19	OB08935B	4P-H Connector						
	OE00857A	BT M3x6 ⊕ Binding (1)						

6.12. D/D Motor Control P.C.B. Ass'y

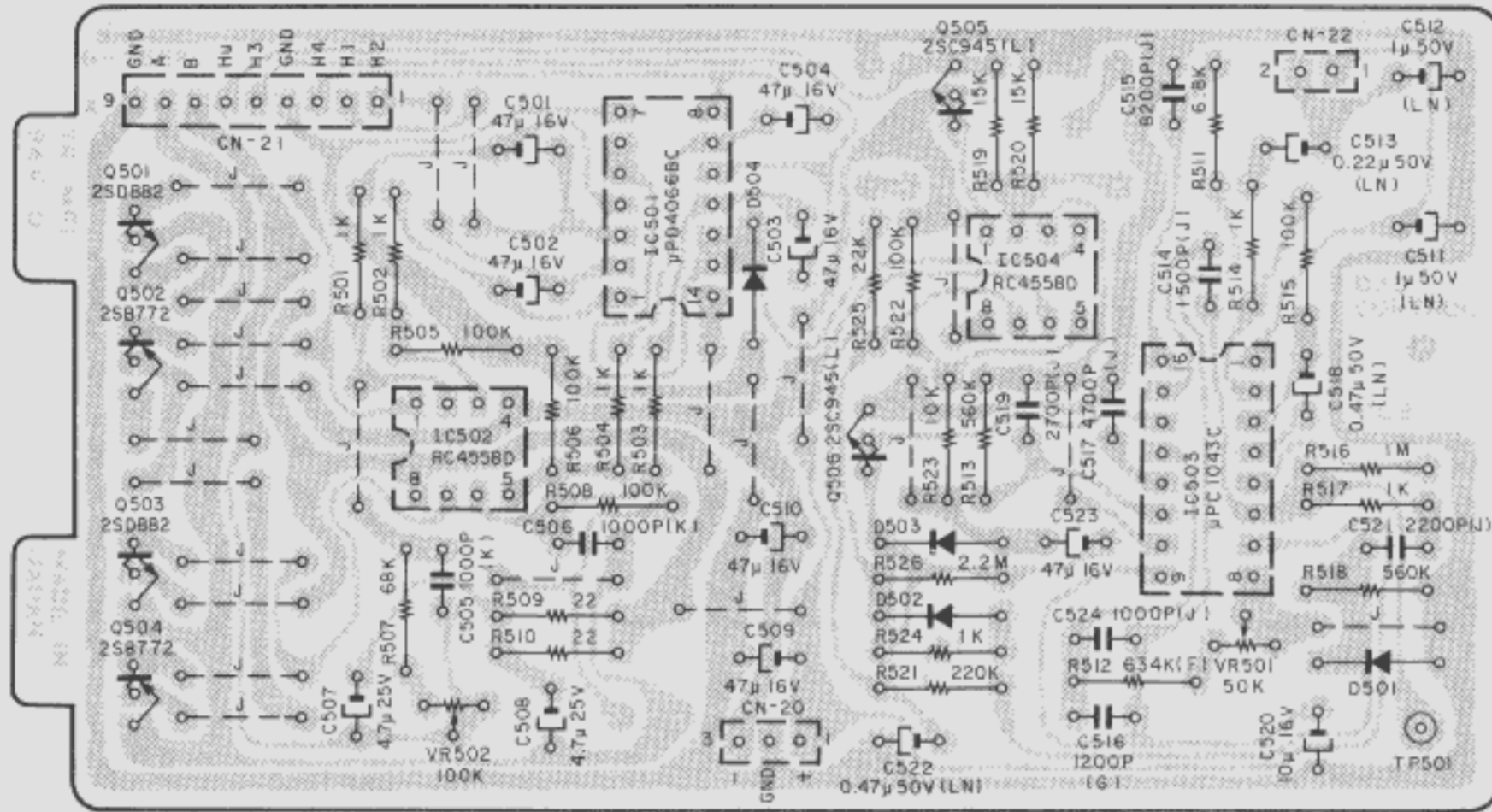


Fig. 6.12

6.13. Motor P.C.B. Ass'y

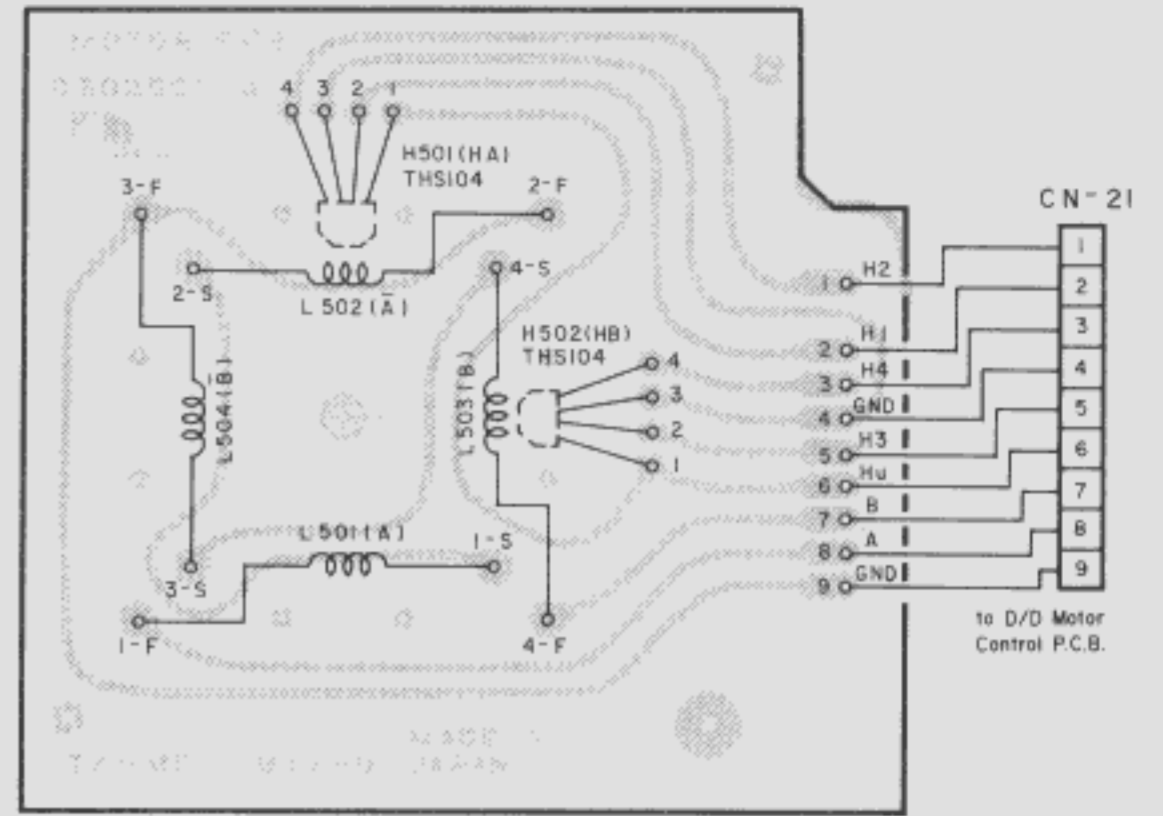


Fig. 6.13

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

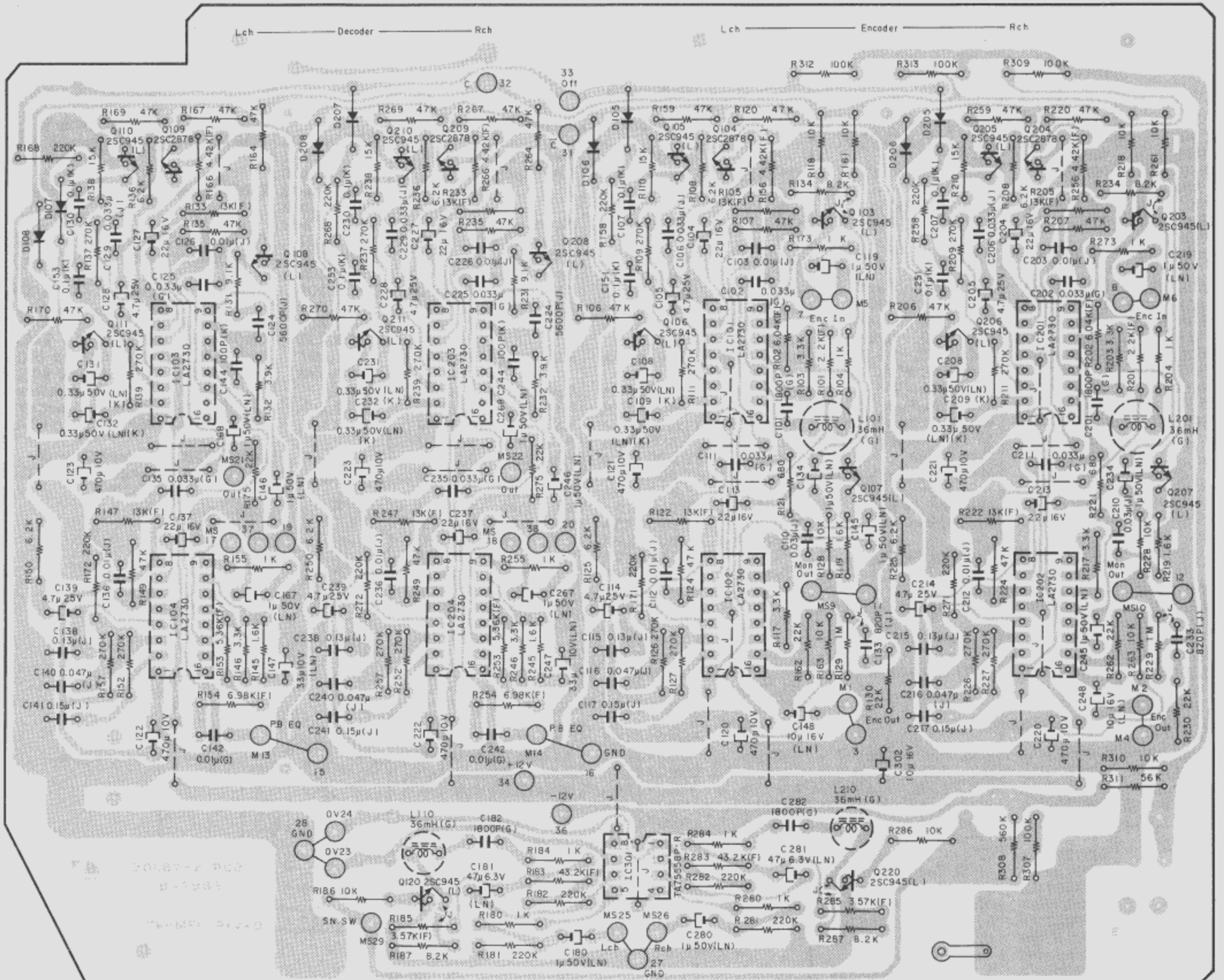


Fig. 6.14

6.15. Logic & Power P.C.B. Ass'y

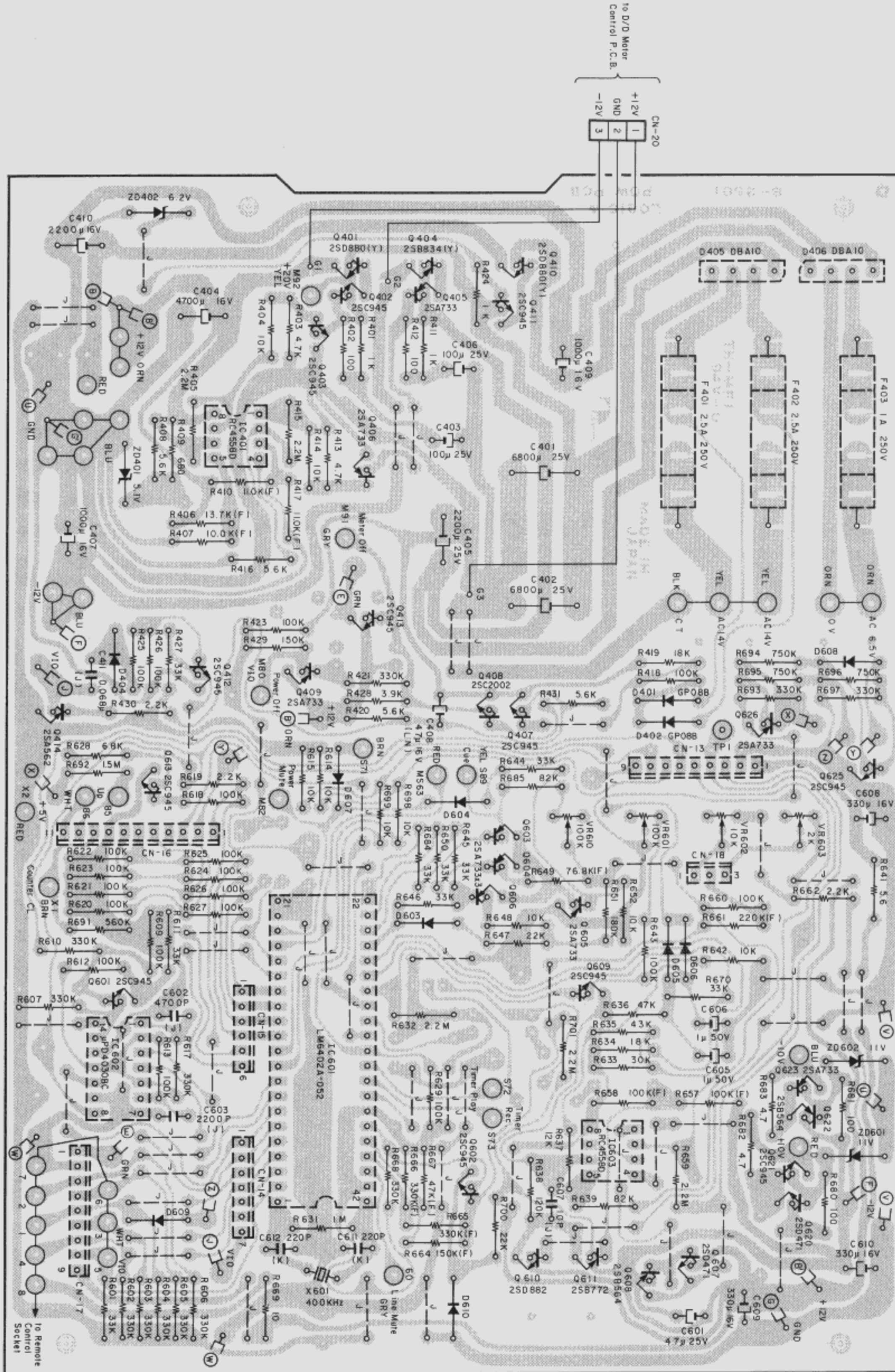
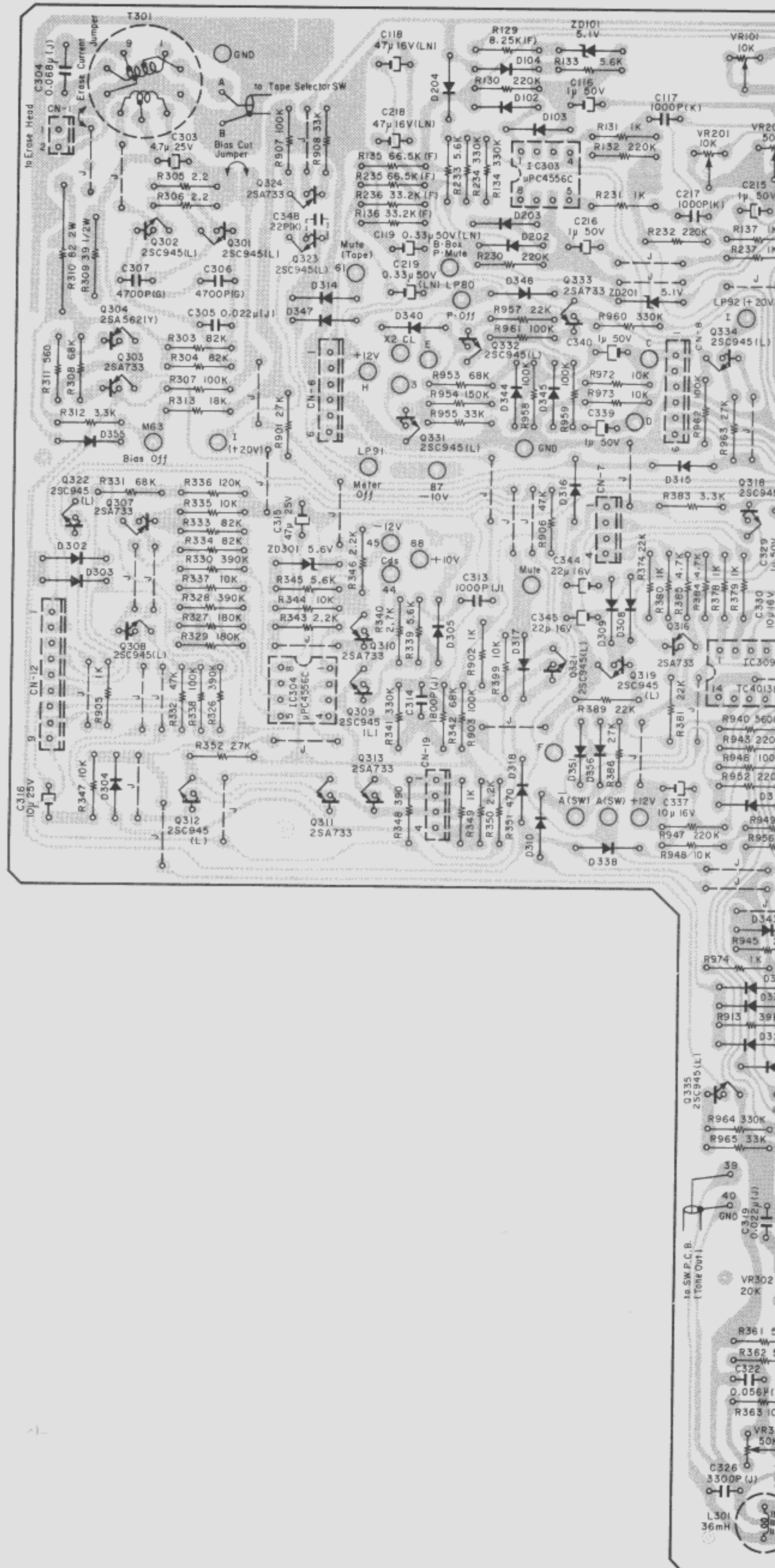


Fig. 6.15

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04775A	Logic & Power P.C.B. Ass'y (U.S.A., Canada & Others)	R614,615 642,648 652,698	OB01888A	RK 10K 1/4W J	Q401,410 Q404	OM04391A	Fuse Label T1.25A 250V (UK, Australia & 220V Class 2) (2)
	BA04774A	Logic & Power P.C.B. Ass'y (Japan)	699 R619,662	OB05622A	RK 2.2K 1/4W J		OB06255A	TR 2SD880 (Y)
	BA04776A	Logic & Power P.C.B. Ass'y (UK, Australia & 220V Class 2)	R628 R631 R632,659 701 R633 R634 R635 R636 R637 R638 R639,685 R641 R647,700 R649 R651 R657,658 R661 R664 R665,666 R667 R669 R680,681 R682,683 R691 R692 R694,695 696 C601 C602 C603 C605,606 C607 C608,609 610 C611,612 CN13 CN14 CN15 CN16 CN17 CN18	OB01682A OB05776A OB05671A OB09075A OB05560A OB09750A OB05641A OB09263A OB05621A OB05668A OB09217A OB05615A OB09751A OB05640A OB09305A OB09472A OB09300A OB09756A OB09451A OB09216A OB09215A OB09321A OB05784A OB09380A OB09755A OB01402A OB05652A OB01802A OB01405A OB09277A OB01502A OB09283A OB08645A OB08643A OB02285A OB08655A OB02287A OB08653A OB08964A OE00507A OE00624A OJ04485A	OB05622A OB01682A OB05776A OB05671A OB09075A OB05560A OB09750A OB05641A OB09263A OB05621A OB05668A OB09217A OB05615A OB09751A OB05640A OB09305A OB09472A OB09300A OB09756A OB09451A OB09216A OB09215A OB09321A OB05784A OB09380A OB09755A CE 4.7μ 25V CM 4700P 50V J CM 2200P 50V J CE 1μ 50V CC 10P 50V J CE 330μ 16V CC 220P 50V K 9P-T Post 7P-T Post 6P-T Post GRN 11P-T Post 9P-T Post GRN 3P-T Post TR Mica TO-126(2) Nut Hex, M3 (2) M3x10 ⊕ Pan (2A) (2) Heat Sink B (1)	Q401,410 Q404	OB06256A OB08601A OB08602A OE00037A OE00172A OE00507A OE00608A OE00857A OJ04484B	TR 2SD880 (Y,GR) TR Mica TO-220(3) TR Bushing TO-220 (3) Earth Lug B-5 (1) Washer 3mm Toothed Lock (1) Nut Hex, M3 (3) M3x10 ⊕ Pan (3A) (3) BT M3x6 ⊕ Binding (1) Heat Sink (1)
	— DC Supply —							
IC401	OB06124B	IC RC4558D						
Q402,403 407,411 412,413 Q405,406 409 Q408 Q414 ZD401 ZD402 D401,402 D404 D405,406 R401,411 424 R402,412 R403,413 R404,414 R405,415 R406 R407 R408,416 420,431 R409 R410,417 R418,423 425,426 R419 R421 R427 R428 R429 R430 C401,402 C403,406 C404 C405 C407,409 C408 C410 C411	OB06100A OB06013A OB06322A OB06202A OB06058A OB06314A OB06109A OB01909A OB06282A OB01857A OB01679A OB01846A OB01888A OB05671A OB09523A OB09203A OB01887A OB05794A OB09504A OB01889A OB05560A OB05627A OB05509A OB05675A OB05626A OB05622A OB09374A OB01272A OB09377A OB05654A OB01397A OB09218A OB01406A OB05682A OB08515A	TR 2SC945 (A) TR 2SA733 TR 2SC2002 TR 2SA562 (Y) ZD 5.1V YZ051 ZD 6.2V YZ062 SiD GP08B SiD 1S1555 Diode Bridge DBA10 RK 1K 1/4W J RK 100 1/4W J RK 4.7K 1/4W J RK 10K 1/4W J RK 2.2M 1/4W J RM 13.7K 1/4W F RM 10K 1/4W F RK 5.6K 1/4W J RK 680 1/4W J RM 11K 1/4W F RK 100K 1/4W J RK 18K 1/4W J RK 330K 1/4W J RK 33K 1/4W J RK 3.9K 1/4W J RK 150K 1/4W J RK 2.2K 1/4W J CE 6800μ 25V CE 100μ 25V CE 4700μ 16V CE 2200μ 25V CE 1000μ 16V CE 47μ 16V (LN) CE 2200μ 16V CM 0.068μ 50V J Insu-Lock (2)						
	— Logic —							
IC601 IC602 IC603 Q601,602 609,613 621,625 Q603,604 605,606 623,626 Q607,620 Q608,622 Q610 Q611 ZD601,602 D603-610 X601 VR601,610 VR602 VR603 R601,611 644,645 646,650 670,684 R602-607 610,617 668,693 697 R609,612 613,618 620-627 629,643 660	OB06324A OB06317A OB06124B OB06100A OB06013A OB06066A OB06069A OB06316A OB06303A OB06231A OB01909A OB08908A OB07257A OB07256A OB07329A OB05509A OB05627A OB01889A	IC LM6402A-052 IC μPD4030BC IC RC4558D TR 2SC945 (A) TR 2SA733 TR 2SD471 TR 2SB564 TR 2SD882 TR 2SB772 ZD 11V RD11EB2 SiD 1S1555 (8) Xtal KBR400BT Semi-fixed VR 100K Semi-fixed VR 10K Semi-fixed VR 2K RK 33K 1/4W J RK 330K 1/4W J (11) RK 100K 1/4W J (15)	F401,402 F401,402 F401,402 F403 F403 F403 CN20	OB02501D OB08369A OB08781A OB02240A OB08374A OB08686A OB08457A OB08672A OE00857A OB08349A OM04187A OM04096C	Logic & Power P.C.B. Fuse 3A 250V (U.S.A., Canada & Others) Fuse 3A 250V (Japan) Fuse T1.25A 250V (UK, Australia & 220V Class 2) Fuse 1A 250V (U.S.A., Canada & Others) Fuse 1A 250V (Japan) Fuse T500mA 250V (UK, Australia & 220V Class 2) 3P-H Connector BT M3x6 ⊕ Binding (2) Fuse Clip (UK, Australia & 220V Class 2) (6) Fuse Label 3A 250V (U.S.A., Canada, Others & Japan) Fuse Label T500mA (UK, Australia & 220V Class 2) (1)			

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

Schematic Ref. No.	Part No.	Description
R333,334	OB05668A	RK 82K 1/4W J
R335,337 344,347	OB01888A	RK 10K 1/4W J
R336	OB05621A	RK 120K 1/4W J
R338	OB01889A	RK 100K 1/4W J
R339,345	OB01887A	RK 5.6K 1/4W J
R340	OB05629A	RK 2.7K 1/4W J
R341	OB05627A	RK 330K 1/4W J
R343,346 350	OB05622A	RK 2.2K 1/4W J
R348	OB05691A	RK 390 1/4W J
R349	OB01857A	RK 1K 1/4W J
R351	OB05576A	RK 470 1/4W J
R352	OB05743A	RK 27K 1/4W J
C313	OB05550A	CM 1000P 50V J
C314	OB01913A	CM 1800P 50V J
C315	OB01409A	CE 47μ 25V
C316	OB01674A	CE 10μ 25V
— Miscellaneous —		
IC310	OB02548A	Main P.C.B.
Q109,110 209,210	OB06143A	IC μPD4001BC
Q320,324	OB06299A	TR 2SC2878
Q321,322 323,326 327,328	OB06013A	TR 2SA733
D314-318 320-324 327-332	OB01872A	TR 2SC945 (L)
R161,261	OB06181A	SiD 1SS53 (16)
R162,262 916,917 920,921	OB05622A	RK 2.2K 1/4W J
R163,263	OB01887A	RK 5.6K 1/4W J
R164,264	OB05691A	RK 390 1/4W J
R397,903 907,909 962	OB01846A	RK 4.7K 1/4W J
R398,906	OB01889A	RK 100K 1/4W J
R399,972 973	OB05641A	RK 47K 1/4W J
R901,932	OB01888A	RK 10K 1/4W J
R902	OB05743A	RK 27K 1/4W J
R908	OB01857A	RK 1K 1/4W J
R912,913	OB05509A	RK 33K 1/4W J
R914,915	OB01854A	RK 39K 1/4W J
R918,922	OB05675A	RK 3.9K 1/4W J
R919,923 924	OB05629A	RK 2.7K 1/4W J
R925,927	OB05577A	RK 330 1/4W J
R926,928	OB05776A	RK 1M 1/4W J
R967,968	OB05671A	RK 2.2M 1/4W J
C133,233	OB09214A	RF 1 1/4W J
C335	OB09187A	CE 1μ 50V (BP)
C339,340	OB09286A	CC 470P 50V K
C342,343	OB01405A	CE 1μ 50V
C348	OB01397A	CE 1000μ 16V
CN1	OB09279A	CC 22P 50V K
CN2	OB08656A	2P-T Post
CN3,19	OB02281A	4P-T Post RED
CN4,5	OB08654A	4P-T Post
CN6	OB08183A	5P-T Post
CN7	OB02284A	6P-T Post RED
CN8	OB02283A	4P-T Post BLU
CN9	OB02286A	6P-T Post BLU
CN10	OB02280A	2P-T Post BLU
CN11	OB08642A	6P-T Post
CN12	OB08645A	9P-T Post
	OB02288A	9P-T Post BLU
	OB07395A	Push Switch 6-6-0
	OE00507A	Nut Hex. M3 (1)
	OE00510A	M3x8 ⊕ Pan (2A) (2)
	OJ04479A	Shield Case A (1)
	OJ04480A	Shield Case B (1)



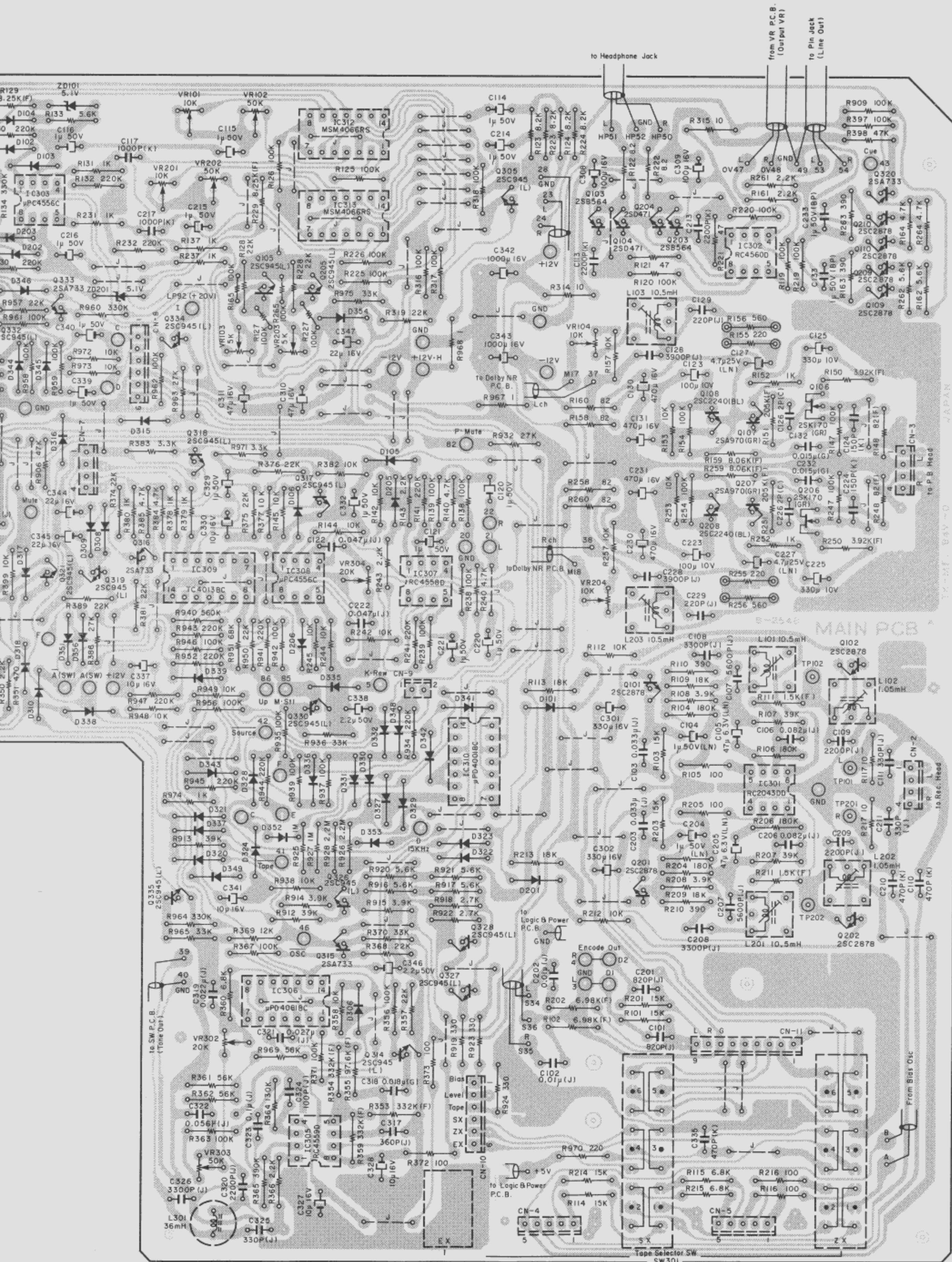


Fig. 6.16

7. SCHEMATIC DIAGRAMS

7.1. Attention to Servicemen

(1) Parts Replacement

Following parts shall be replaced with the specified ones. Refer to the parts list.

- (a) Power Supply Circuit
 - Power Cord
 - Power Transformer: T1
- (b) Power Switch P.C.B. Ass'y
 - Power Switch: SW1
 - Spark Killer: M2
- (c) Logic & Power P.C.B. Ass'y
 - Fuses: F401, 402, 403
 - Power Transistors: Q401, 404, 408, 410, 414, 607, 608, 610, 611, 620, 622
 - Diode Bridges: D405, 406
 - Fail Safe Type Resistors: R641, 669, 680, 681, 682, 683
- (d) Main P.C.B. Ass'y
 - Power Transistors: Q103, 104, 203, 204, 304
 - Fail Safe Type Resistors: R122, 158, 160, 222, 258, 260, 301, 302, 305, 306, 309, 310, 314, 315, 372, 373, 967, 968
- (e) Shut-off P.C.B. Ass'y
 - Fail Safe Type Resistor: R605
 - Lamp: PL407
- (f) Indicator P.C.B. Ass'y
 - Power Transistors: Q901, 902, 903, 904, 905
 - Fail Safe Type Resistor: R916
 - Thermal Fuse: TF901
- (g) Switch P.C.B. Ass'y
 - Fail Safe Type Resistors: R301, 302
- (h) D/D Motor Control P.C.B. Ass'y
 - Power Transistors: Q501, 502, 503, 504
 - Fail Safe Type Resistors: R509, 510

(1) Cassette Case Lamp

(2) Insulation Check

Before returning the repaired ZX-9 to a customer, check to insure that the exposed part is accurately insulated from the AC line by measuring the leakage current or the insulation resistance between them.

7.2. IC Block Diagrams

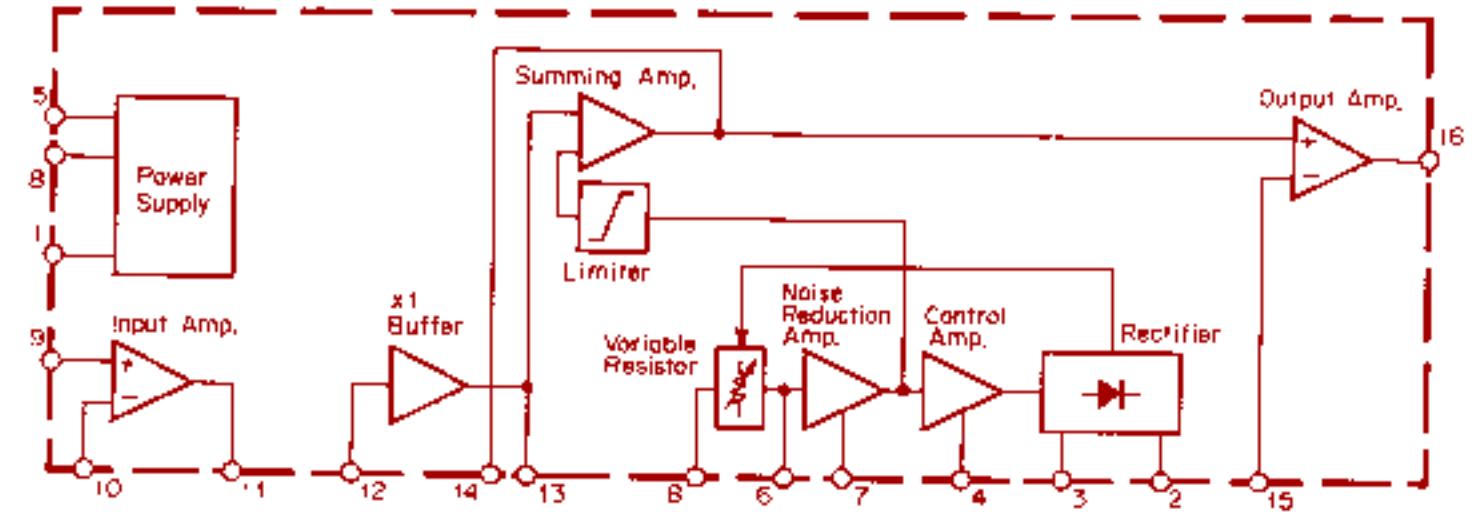


Fig. 7.2.1 Dolby NR IC LA2730

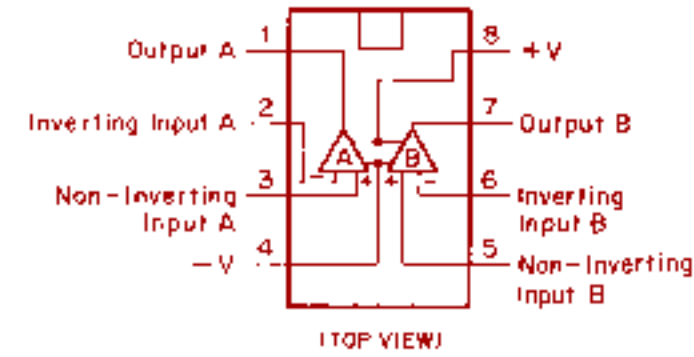


Fig. 7.2.2 Operational Amp. IC RC4558D, RC2043DD, μPC4556C, RC4560D, RC4559D, TA75558P-R

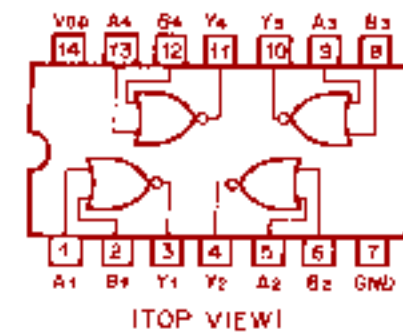


Fig. 7.2.3 NOR Gate C-MOS IC

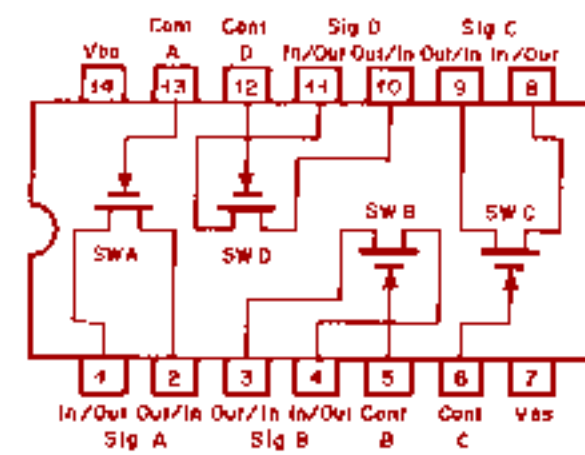


Fig. 7.2.4 Bilateral Switch C-MOS IC μPD4066BC, MSM4066RS

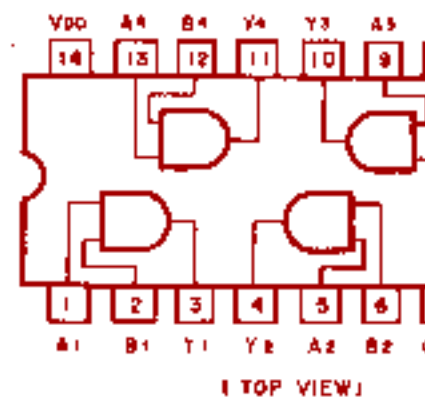


Fig. 7.2.5 AND Gate C-MOS IC

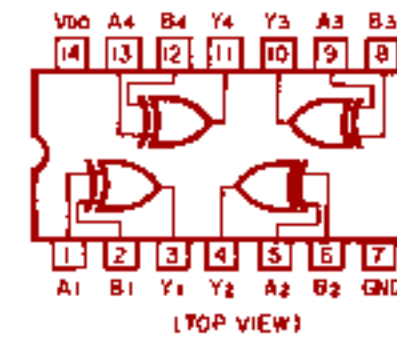


Fig. 7.2.6 Exclusive OR Gate C-MOS IC μPD4030BC

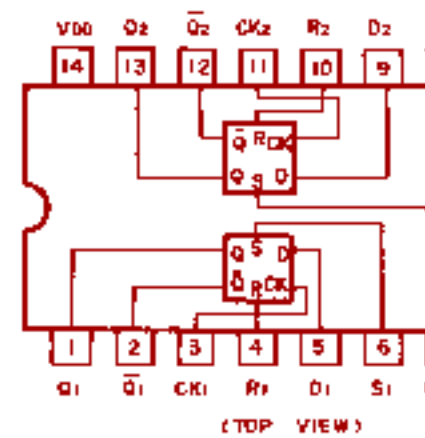


Fig. 7.2.7 D-Type Flip-Flop C-MOS IC TC4013BP

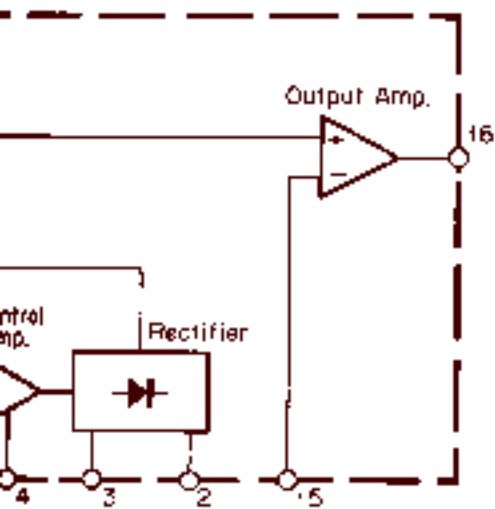


Fig. 7.2.2 Precision Rectifier IC μ 2730

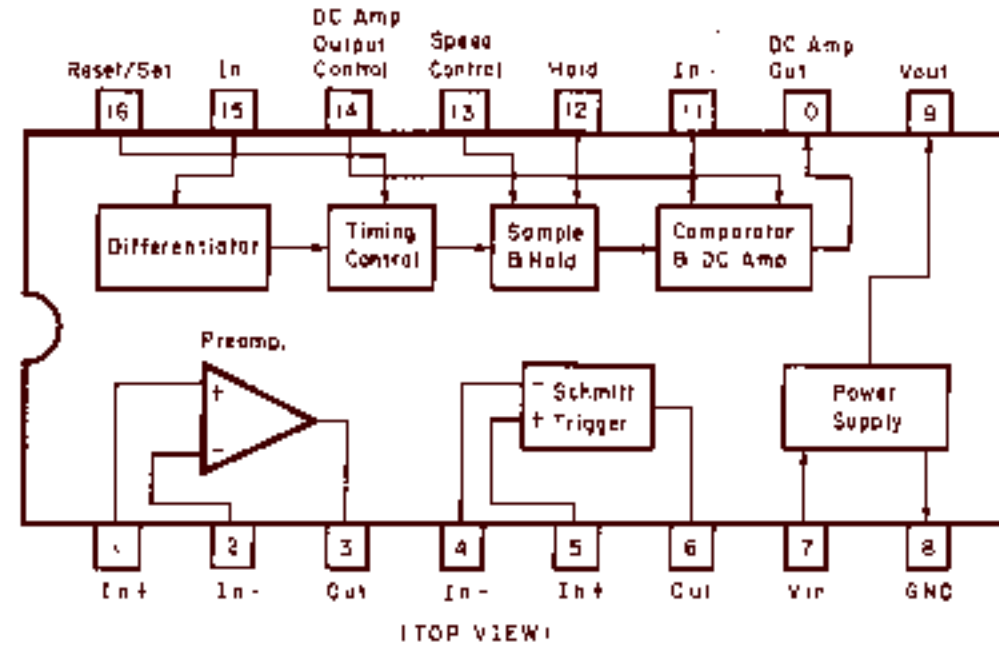


Fig. 7.2.8 Motor Control IC μ PC1043C

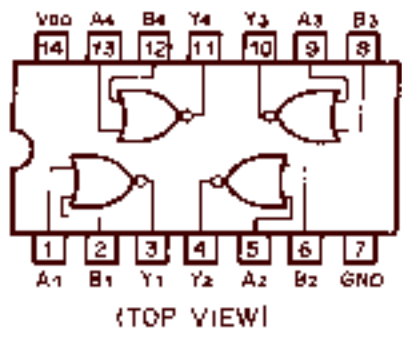


Fig. 7.2.3 NOR Gate C-MOS IC μ PD4001BC

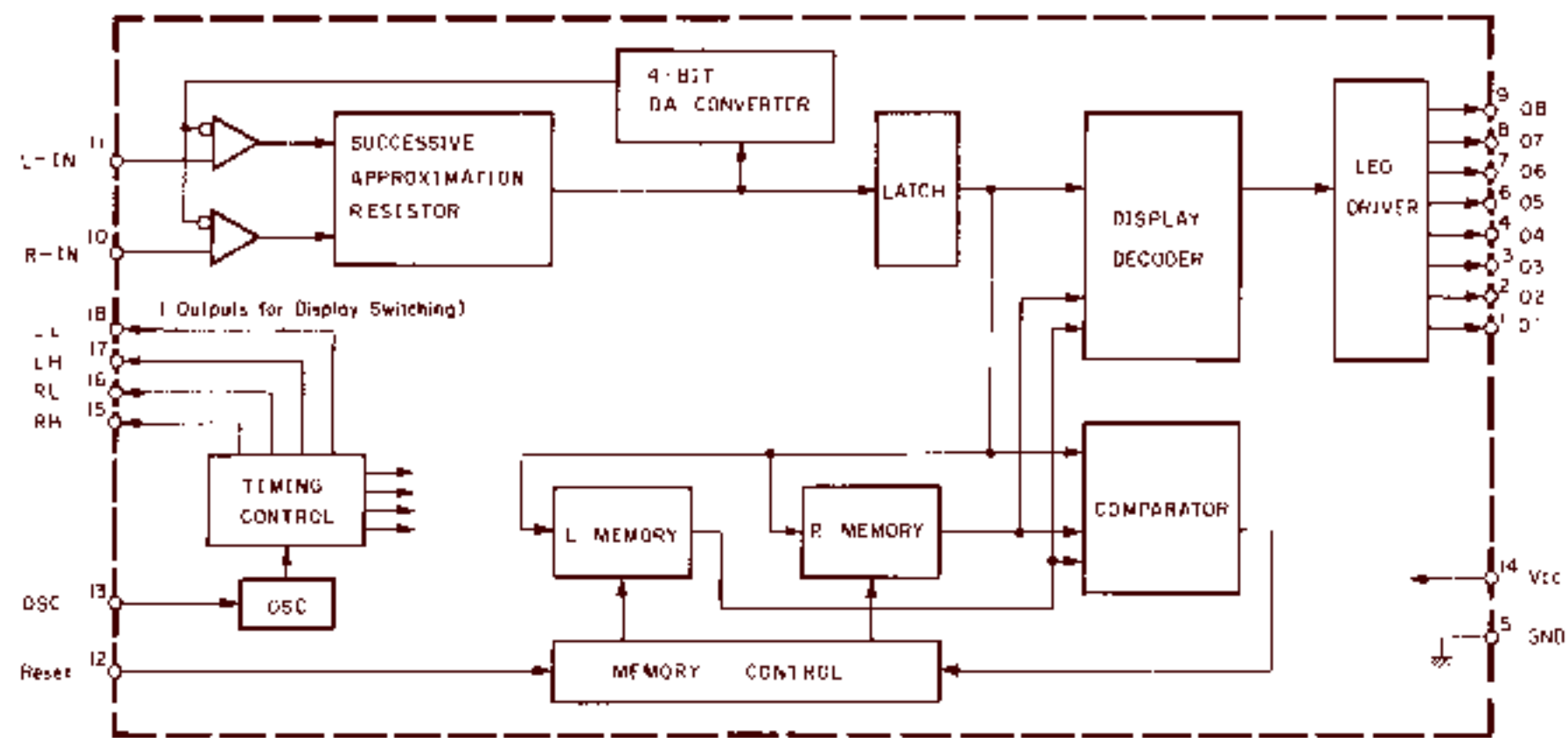


Fig. 7.2.9 Level Meter Control IC MSL9350RS

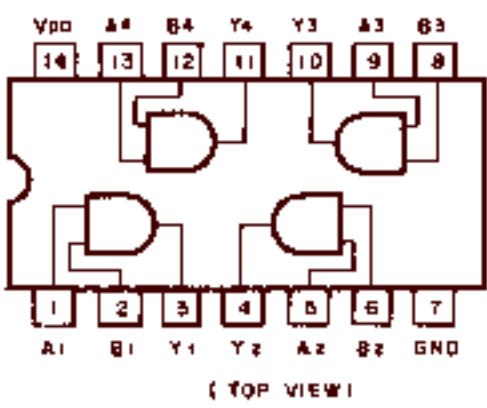


Fig. 7.2.5 AND Gate C-MOS IC μ PD4081BC

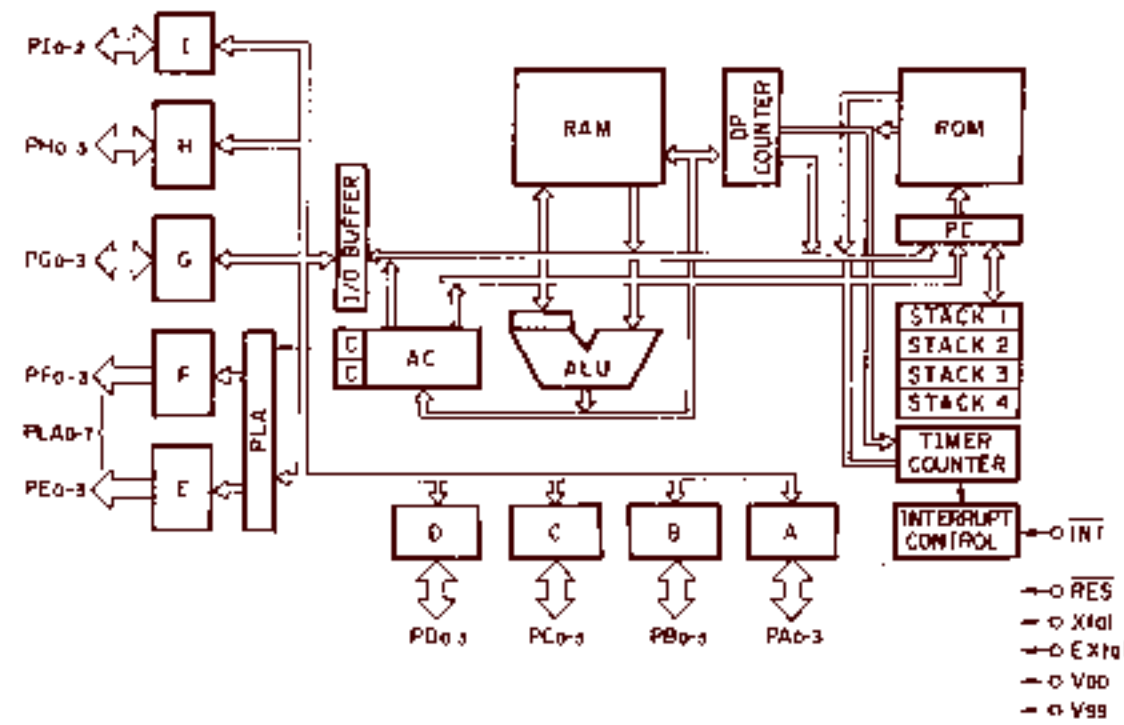


Fig. 7.2.7 D-Type Flip-Flop C-MOS IC TC4013BP

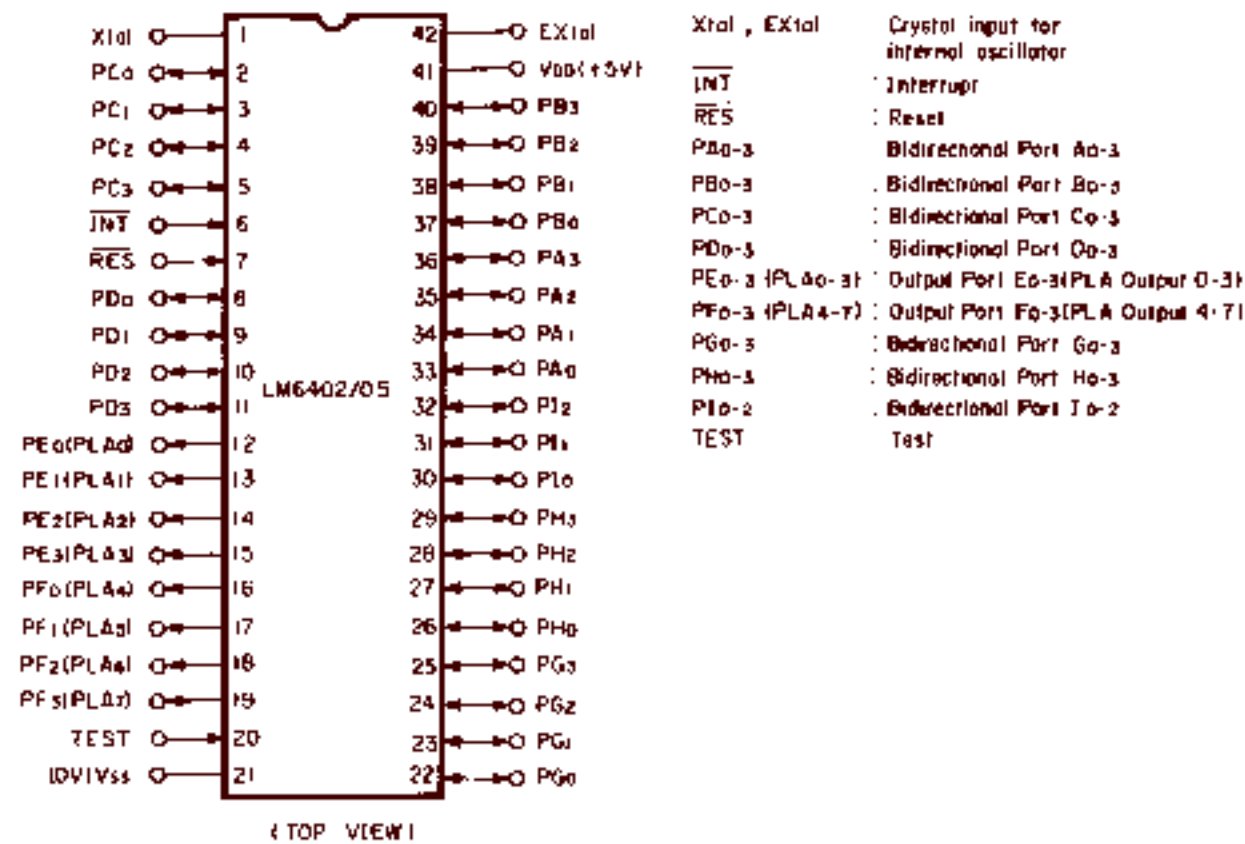
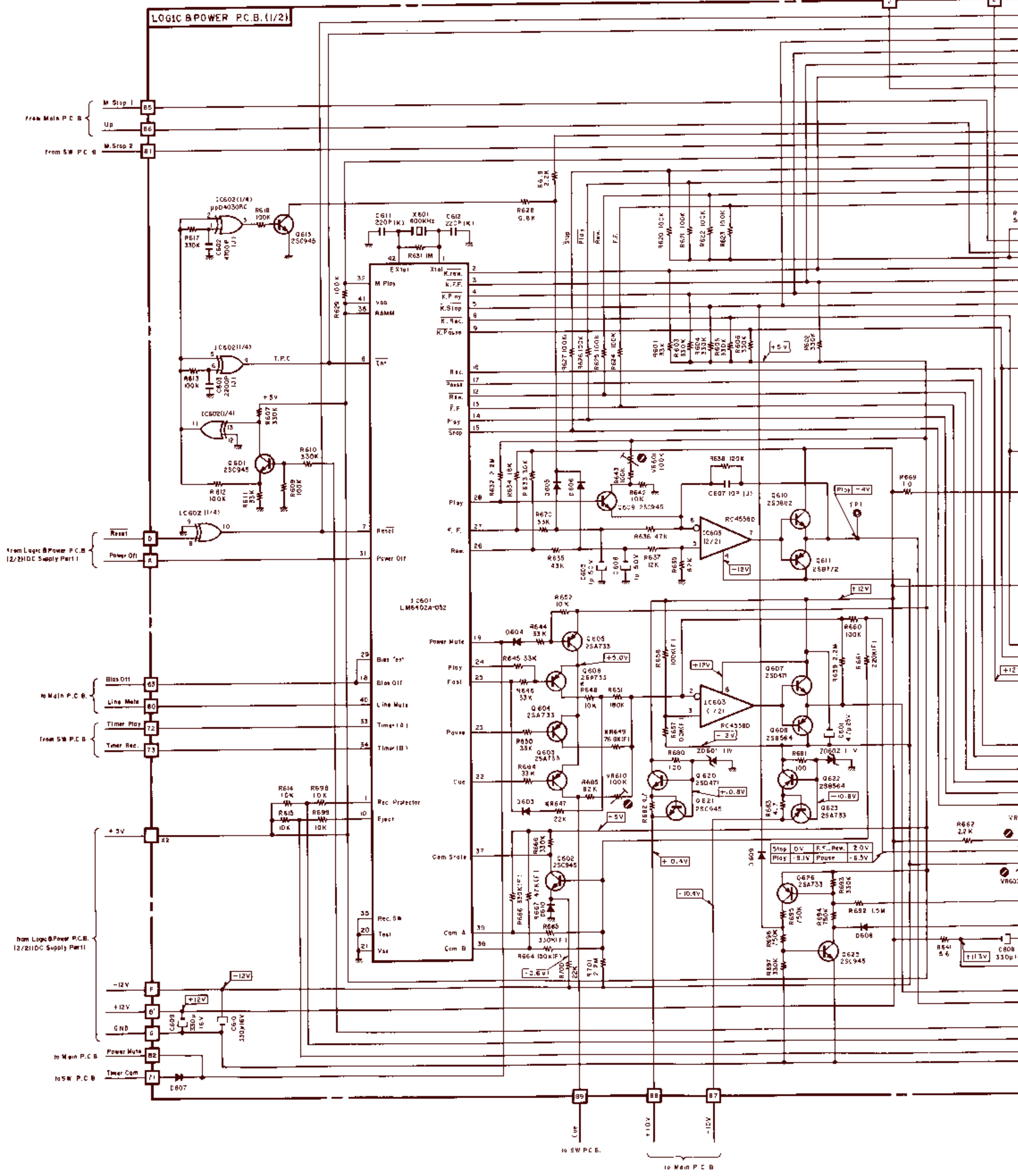


Fig. 7.2.10 4-bit Micro-processor LM6402A-052/048

7.3. Mechanism Control Section



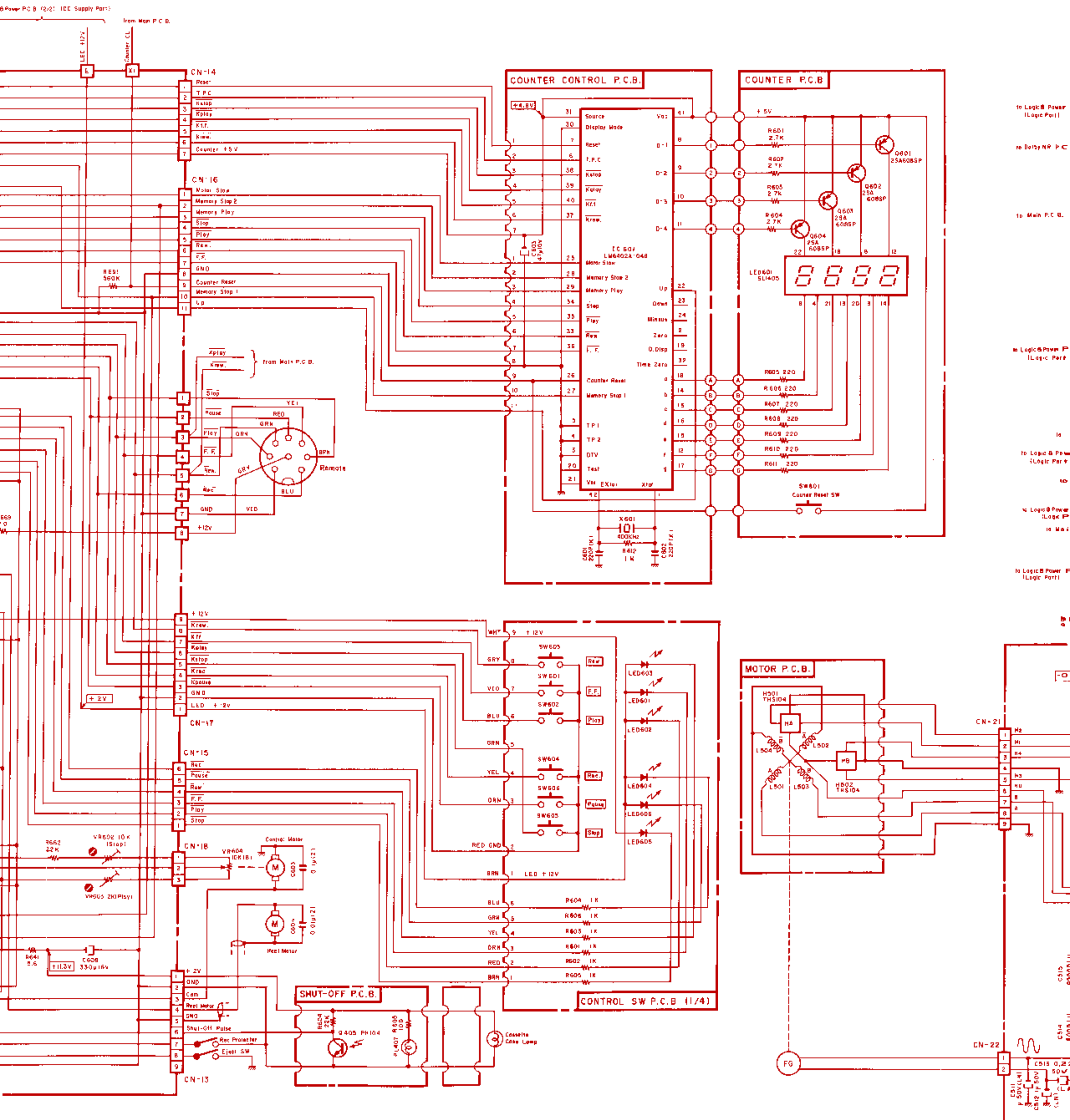
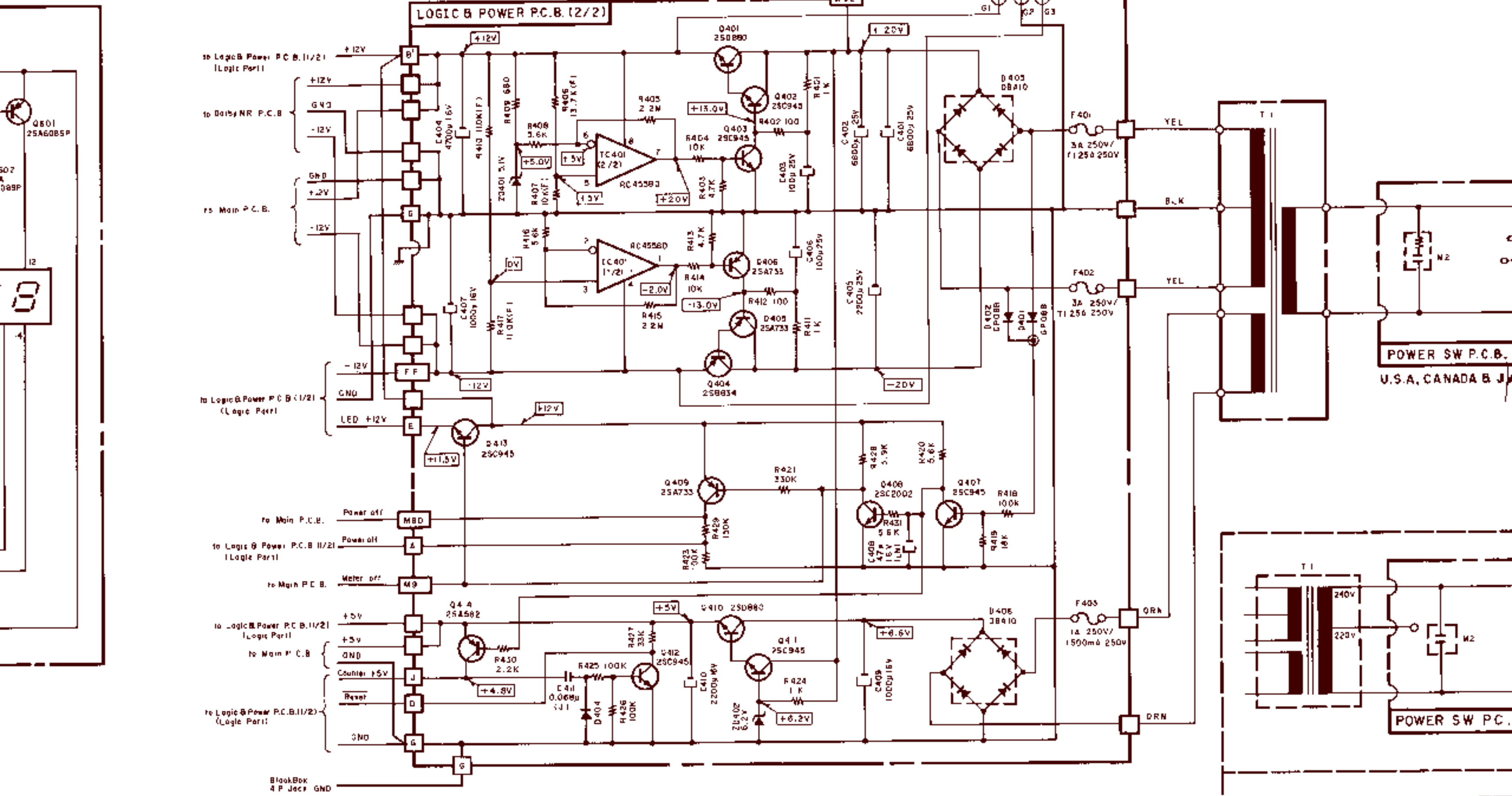
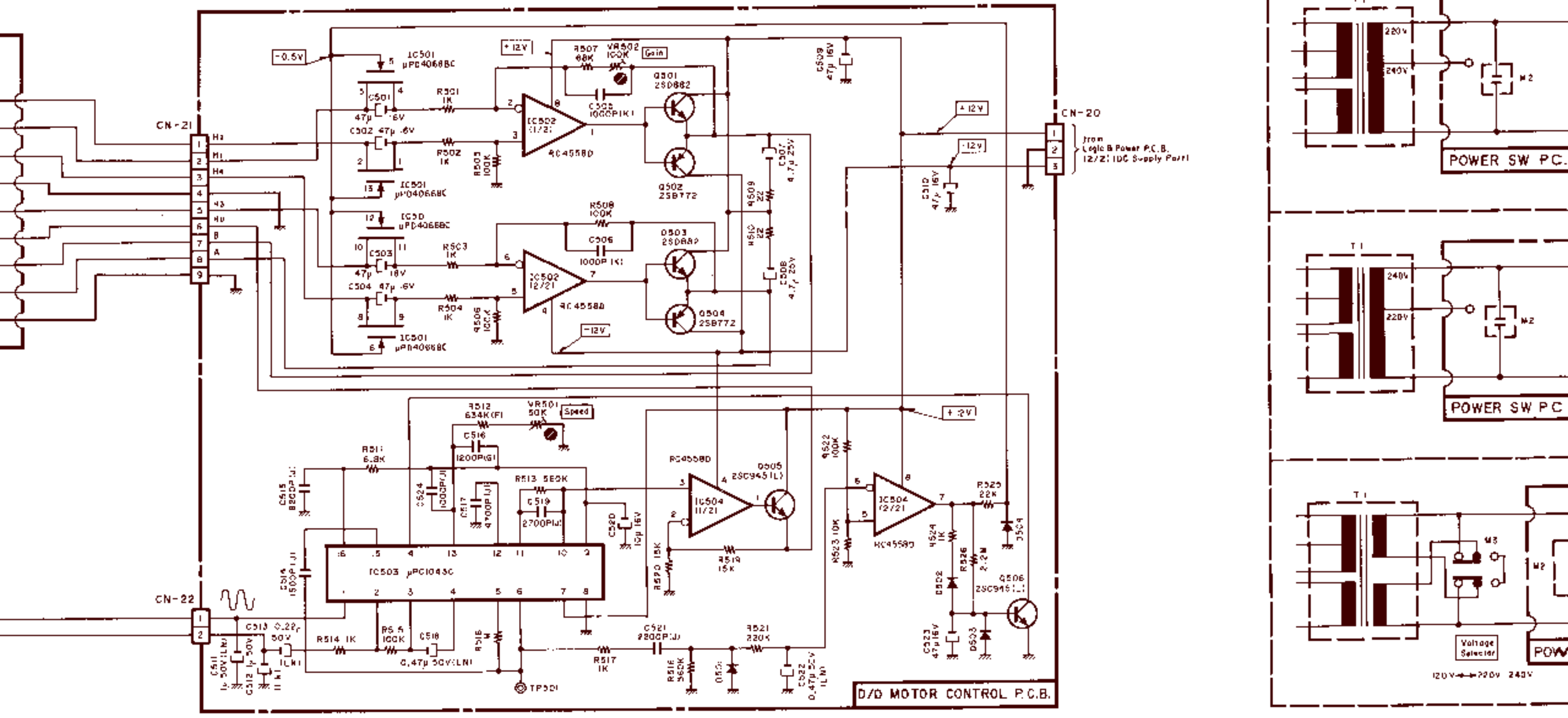


Fig. 7.3



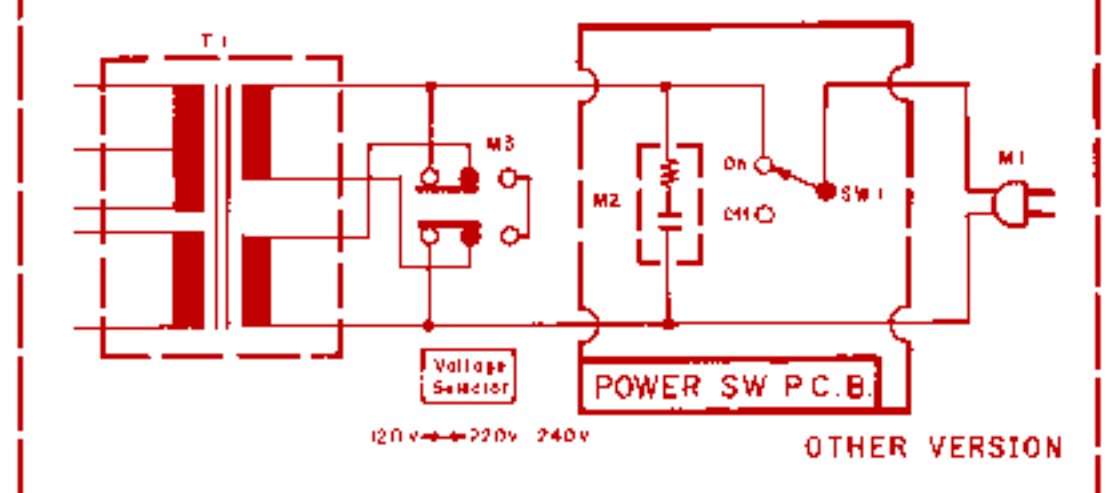
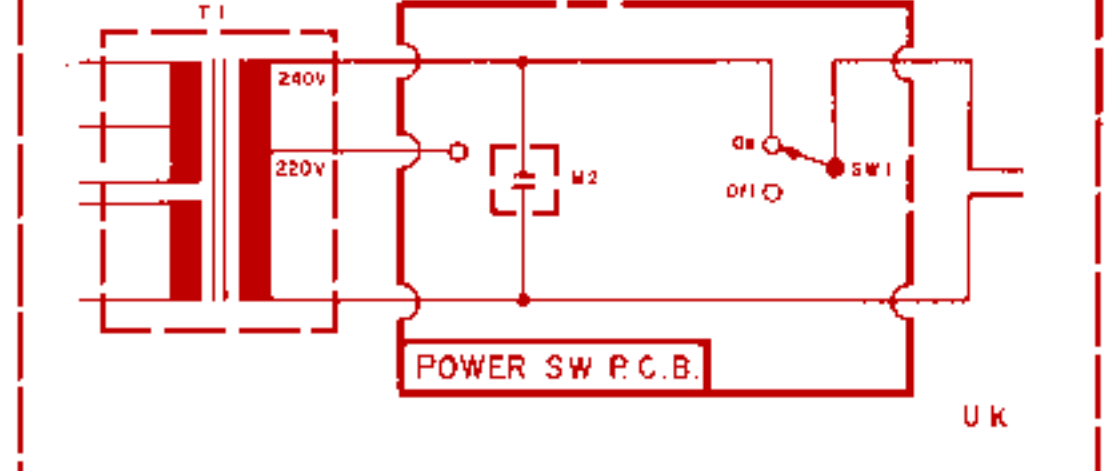
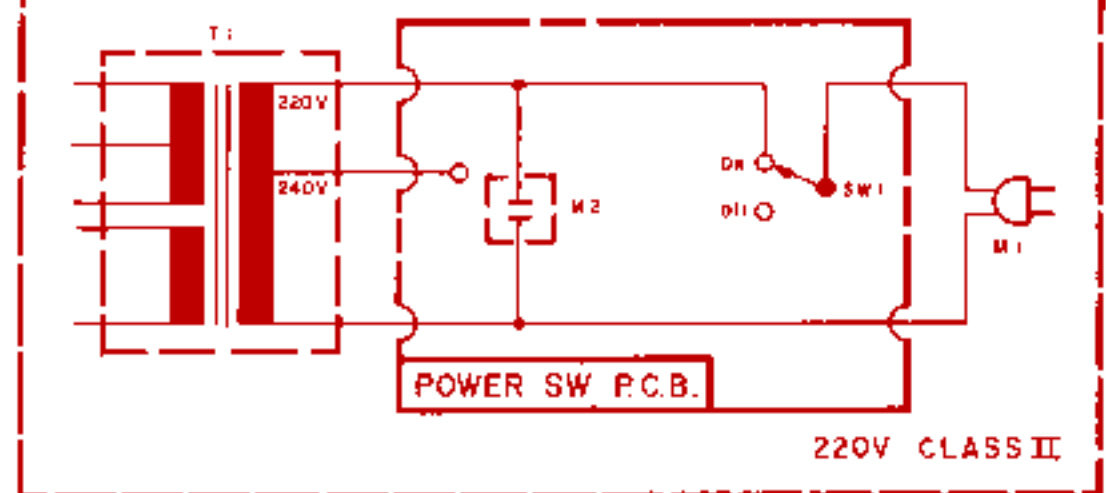
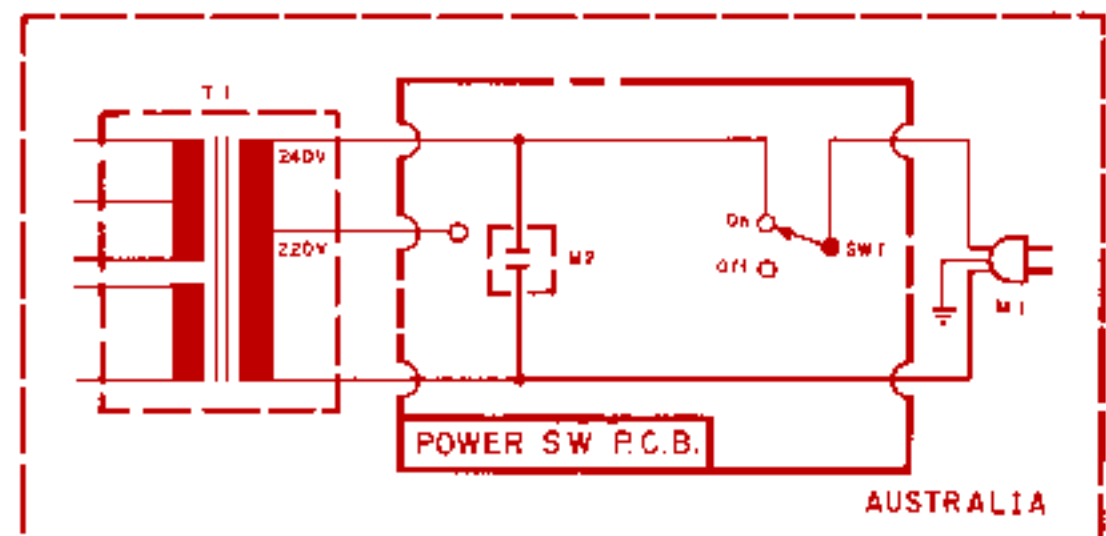
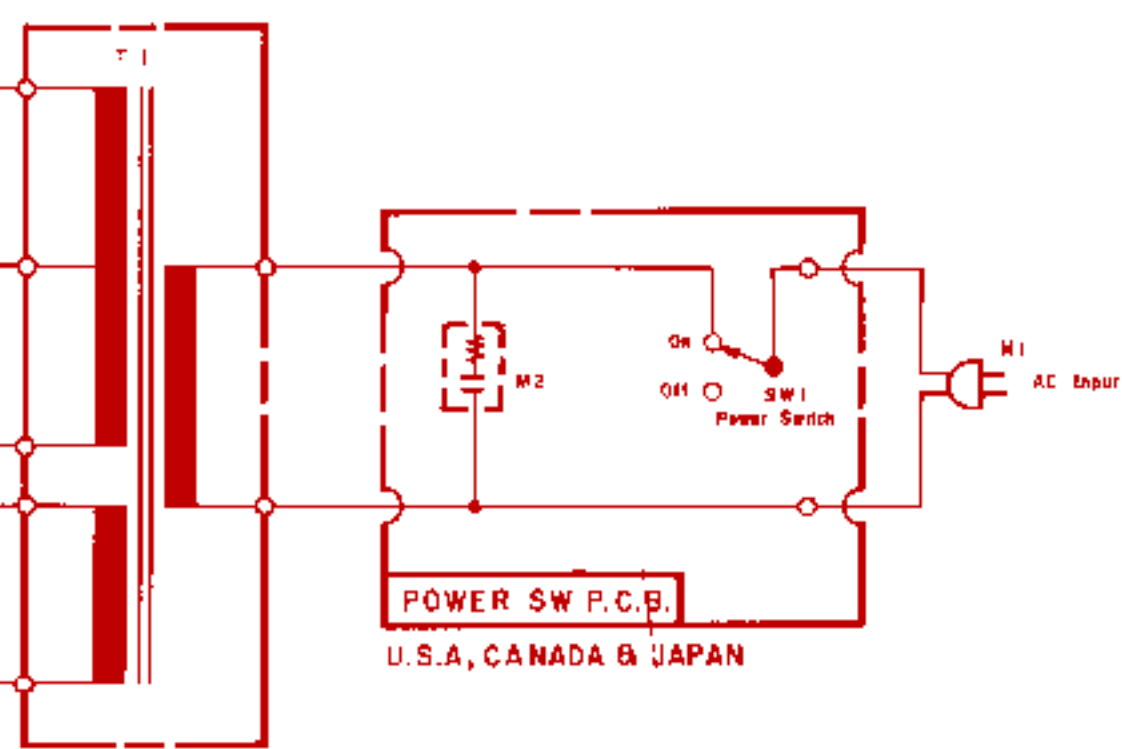
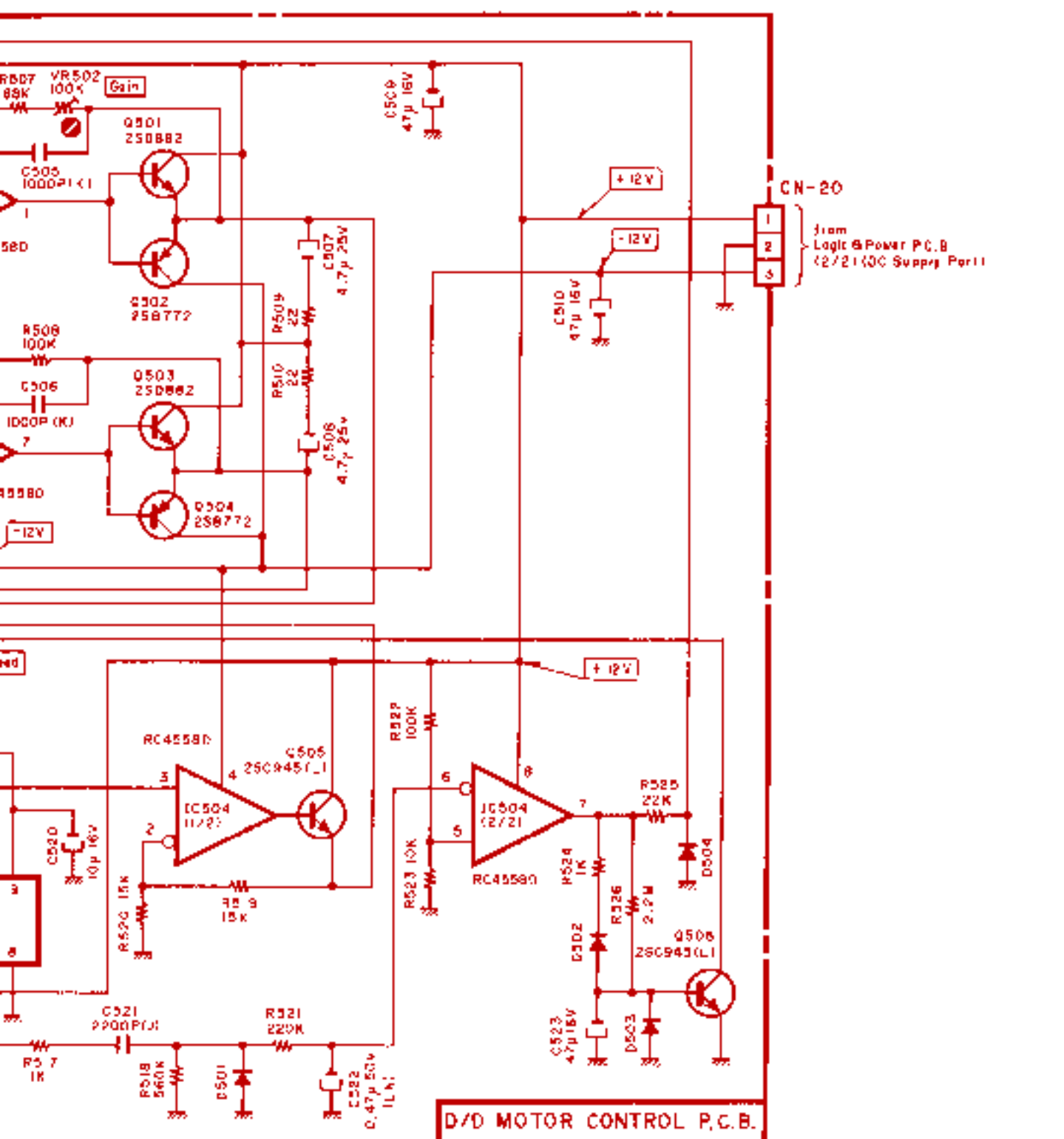
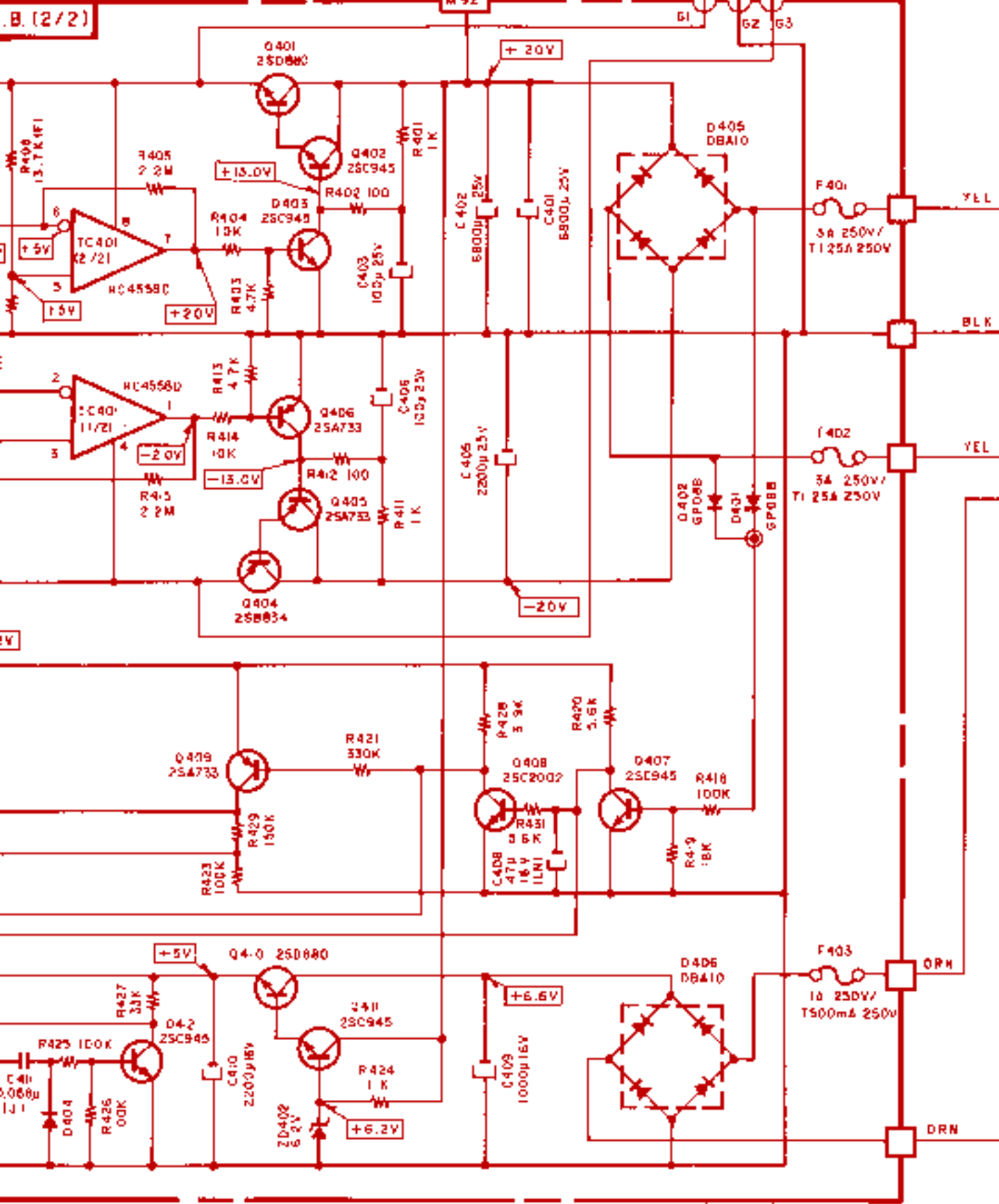
Notes: 1. Diode is 18S53, 18953, or 18953.
2. Resistor and capacitor marked with a 'J' are 5% tolerance.



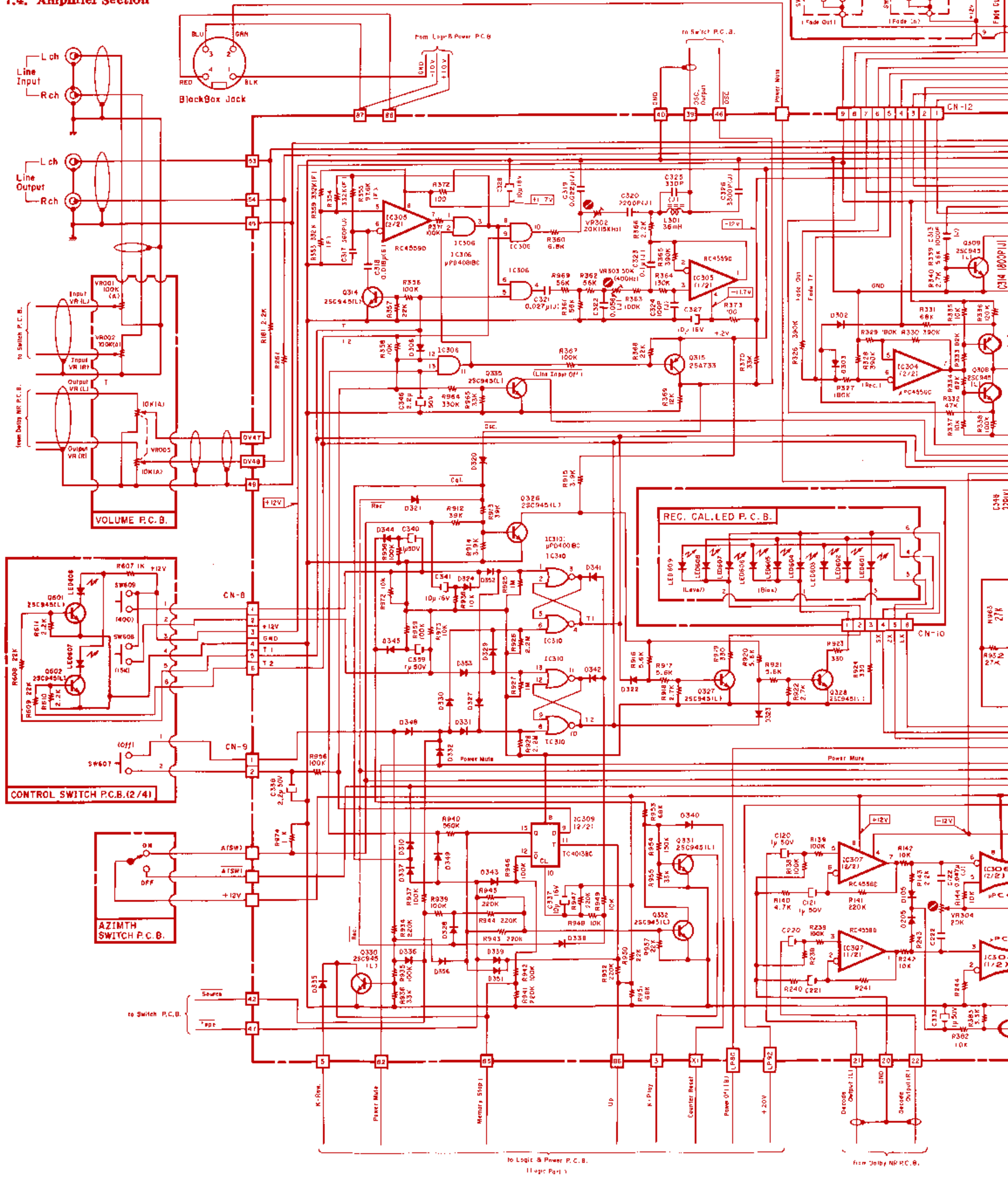
120V \leftrightarrow 220V 240V

10 D/D Motor Control P.C.B.
CN-20

- Notes: 1. Diode is 1S853, 1S953, or 1S1555 unless otherwise specified.
2. Resistor and capacitor marked with * show typical value.



7.4. Amplifier Section



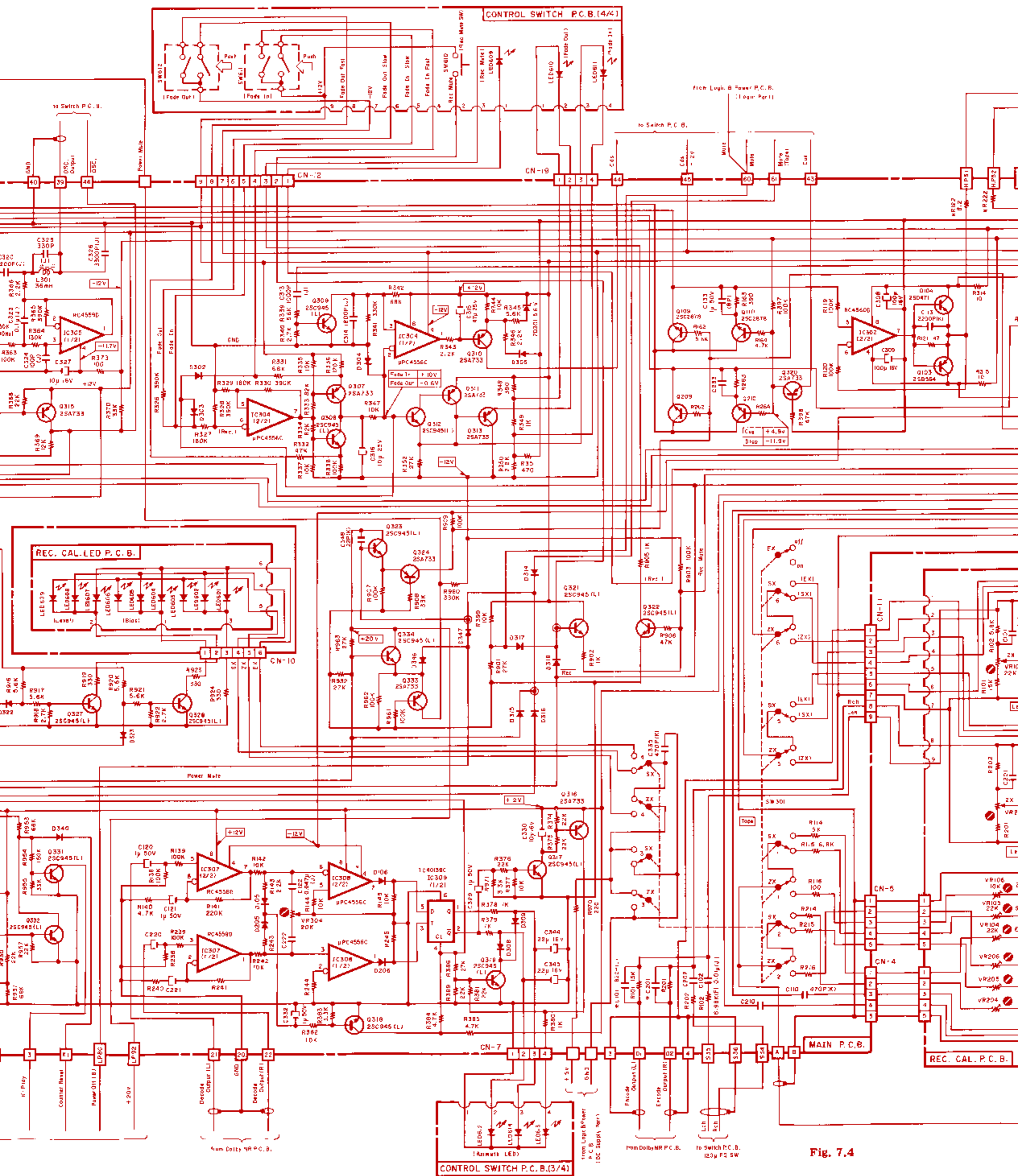


Fig. 7.4

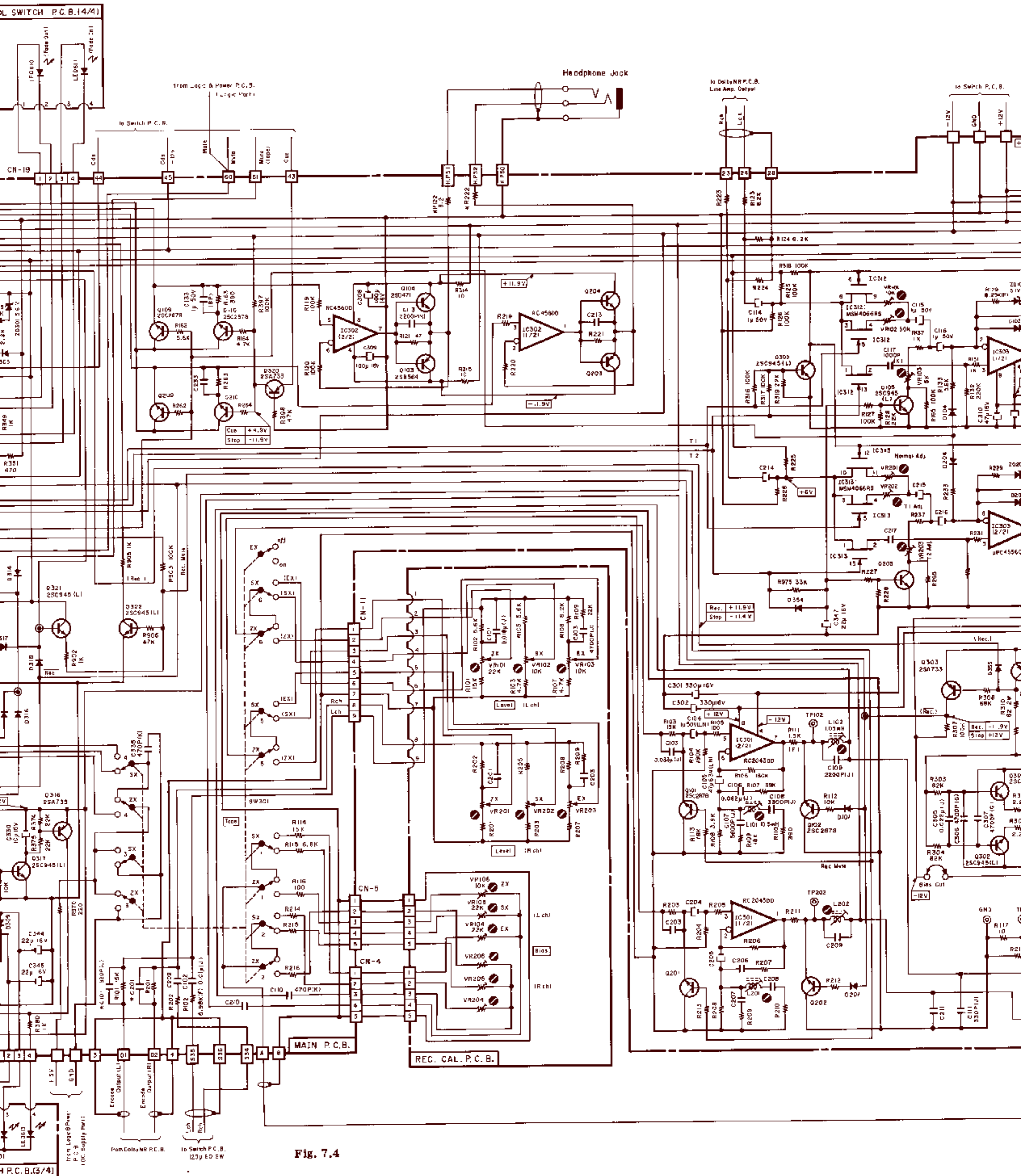
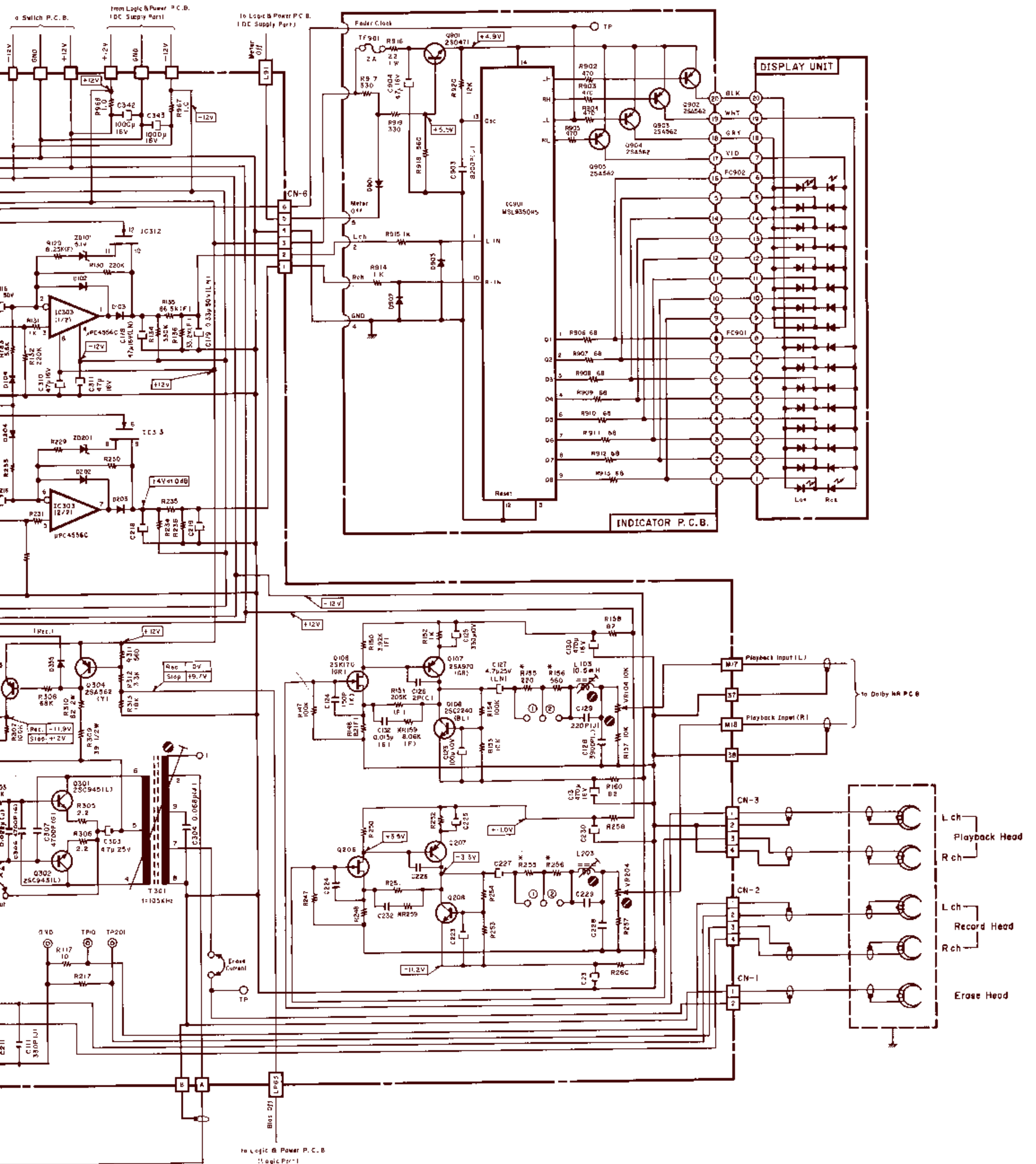
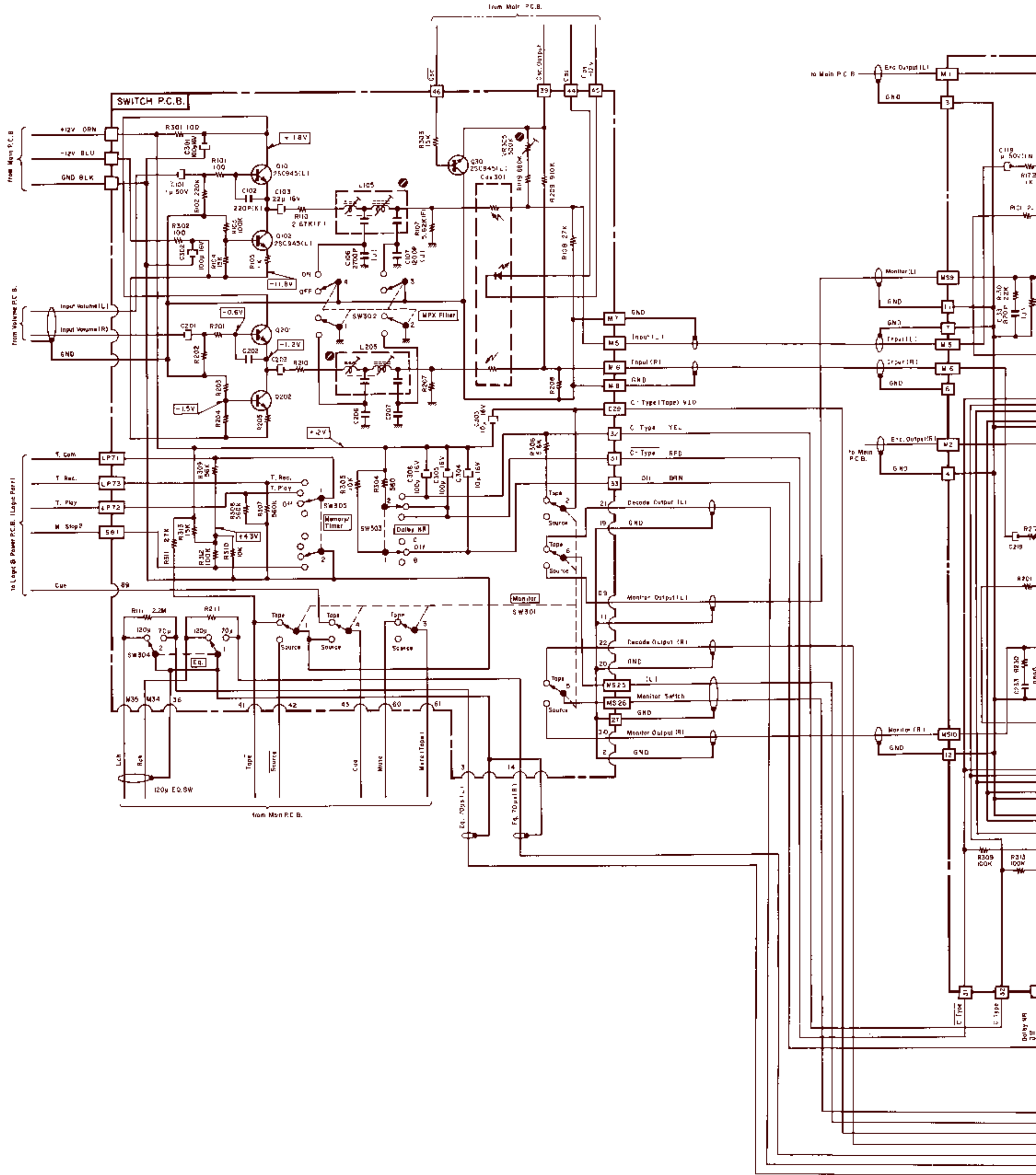


Fig. 7.4

- Notes: 1. Diode is 1SS53, 1S953, or 1S1555 unless otherwise specified.
 2. Resistor and capacitor marked with * show typical value.



7.5. Dolby NR Section



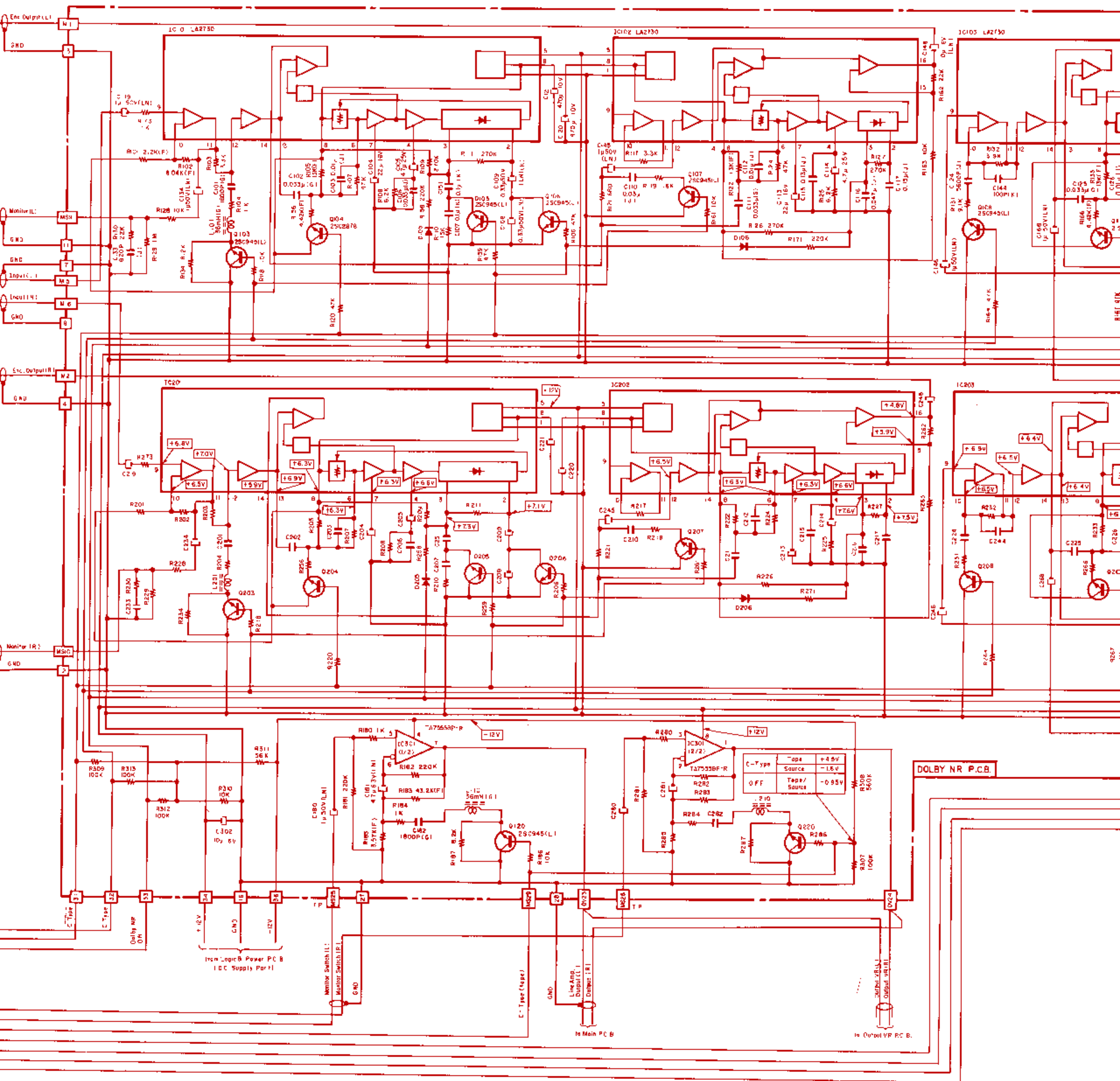
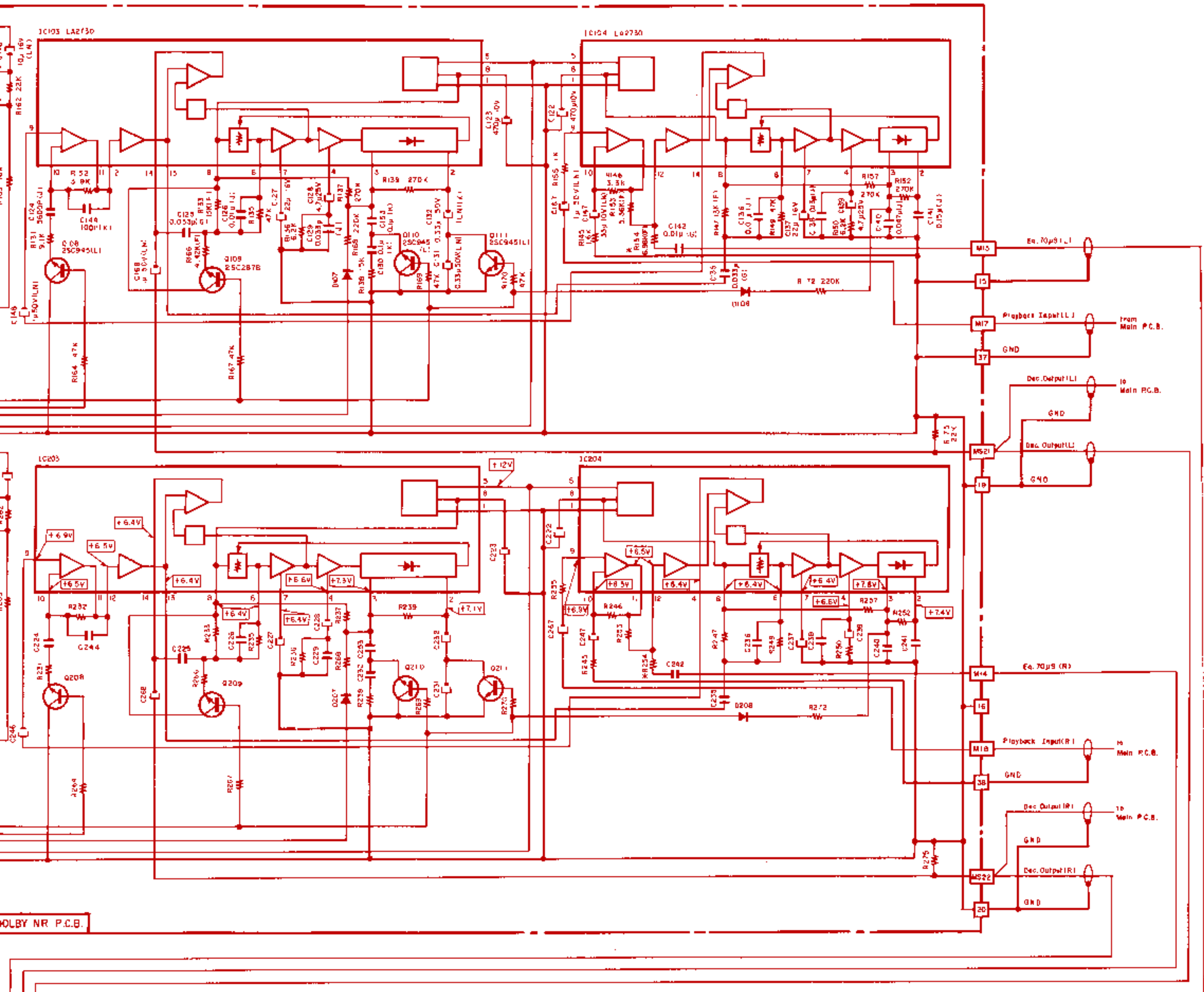
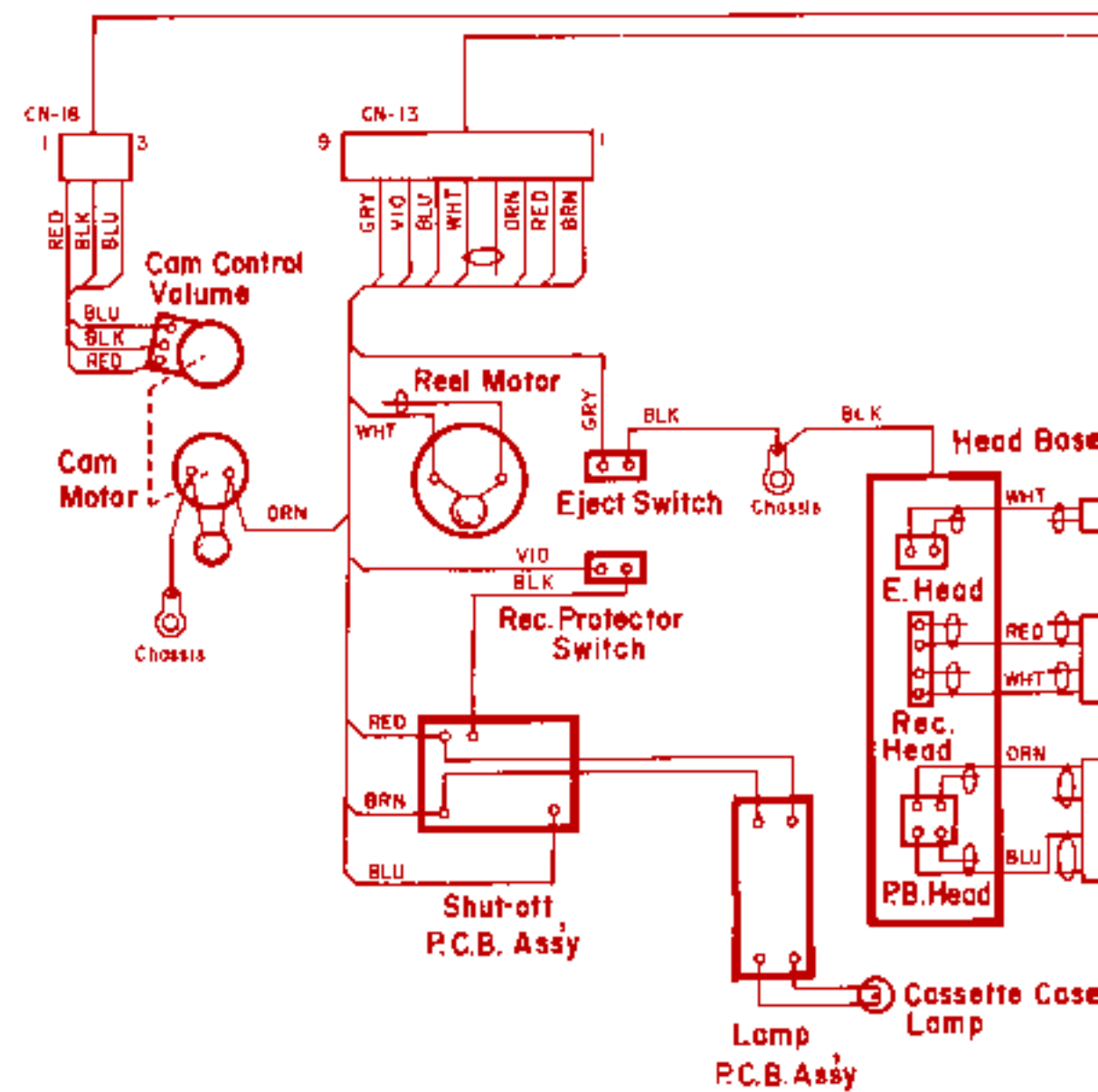
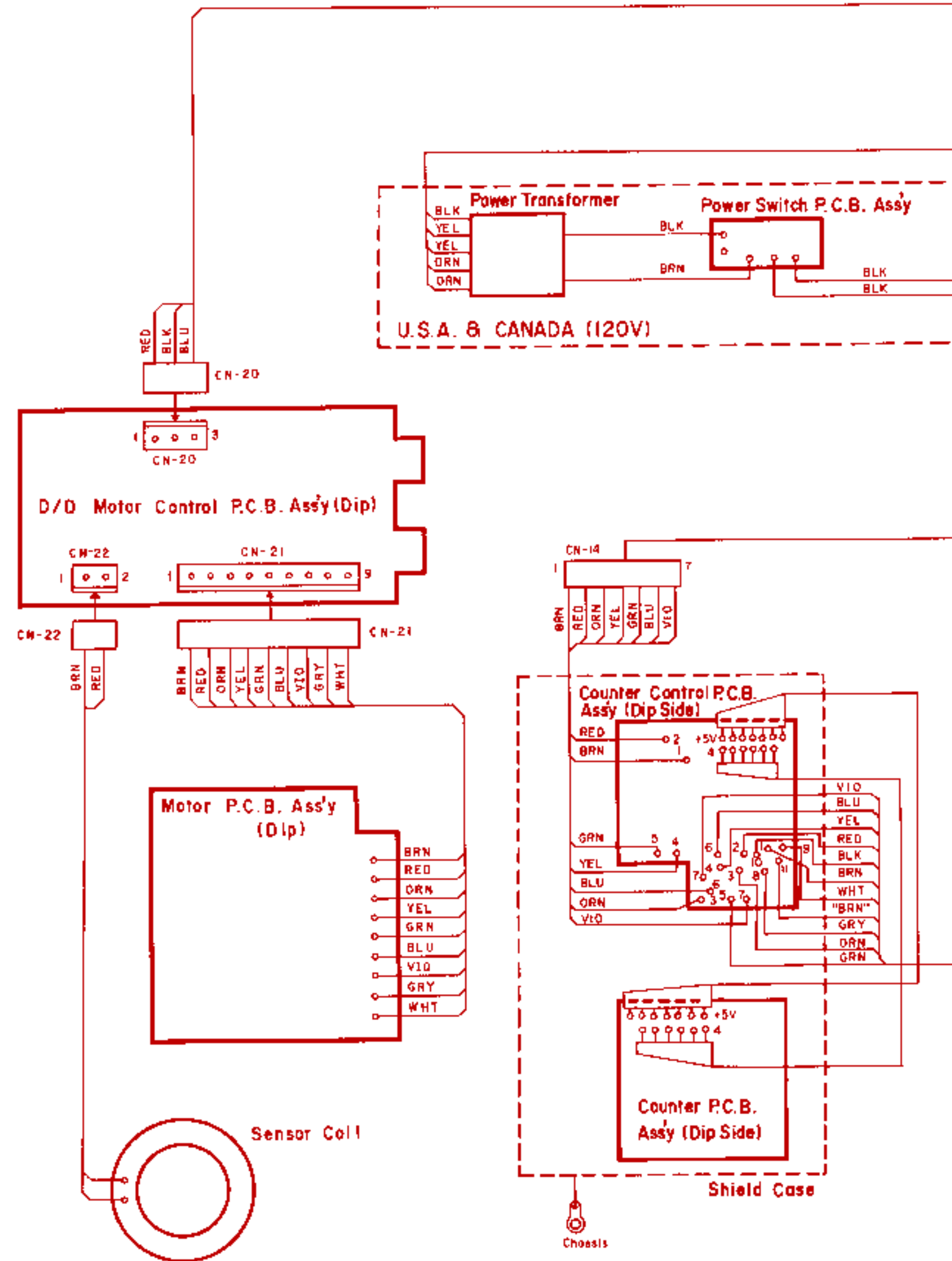
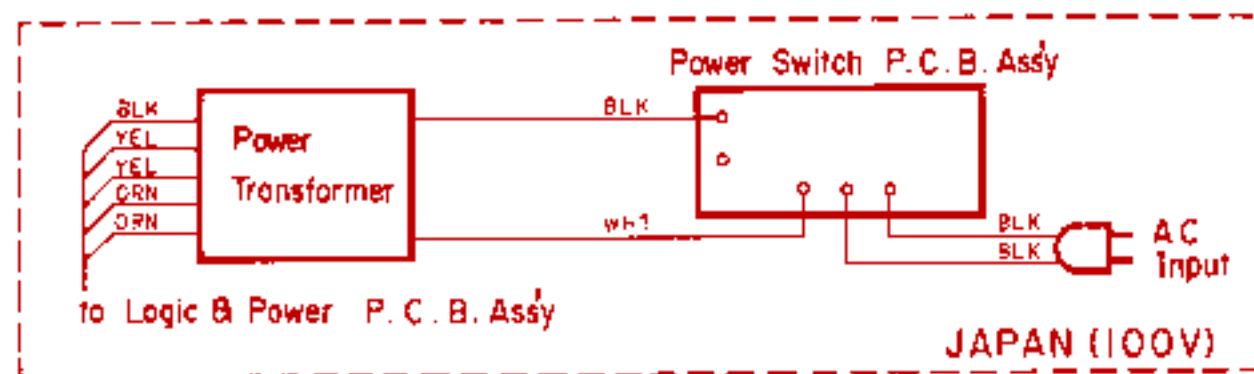
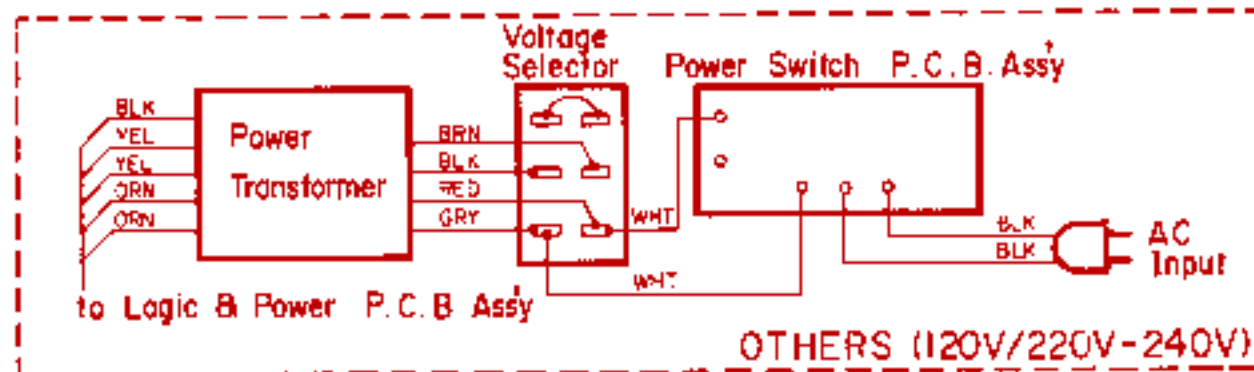
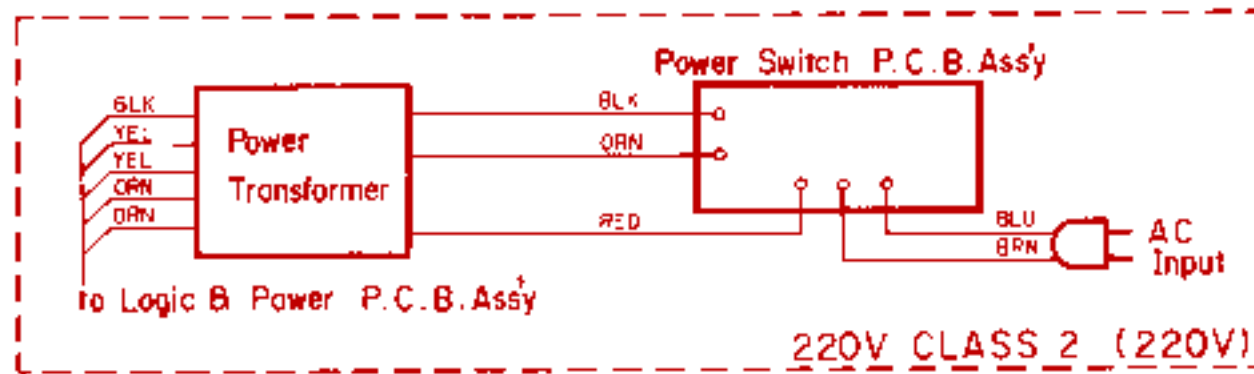
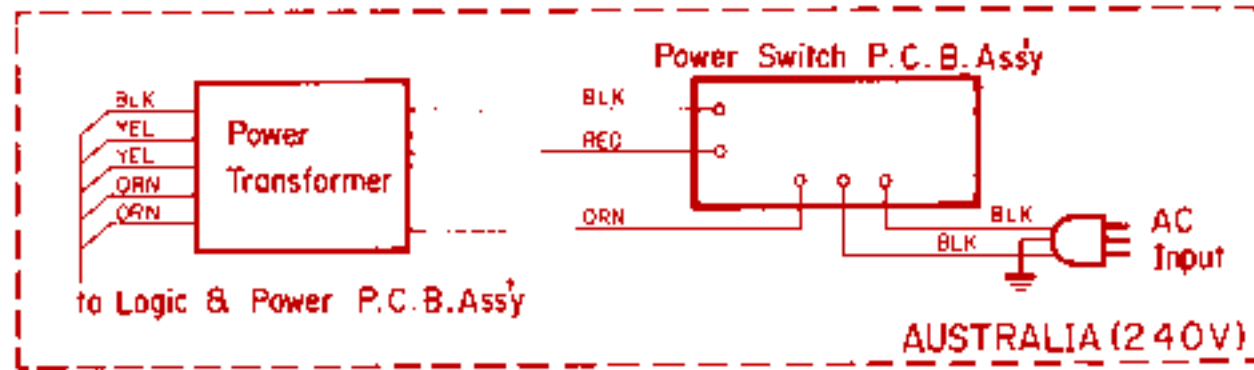
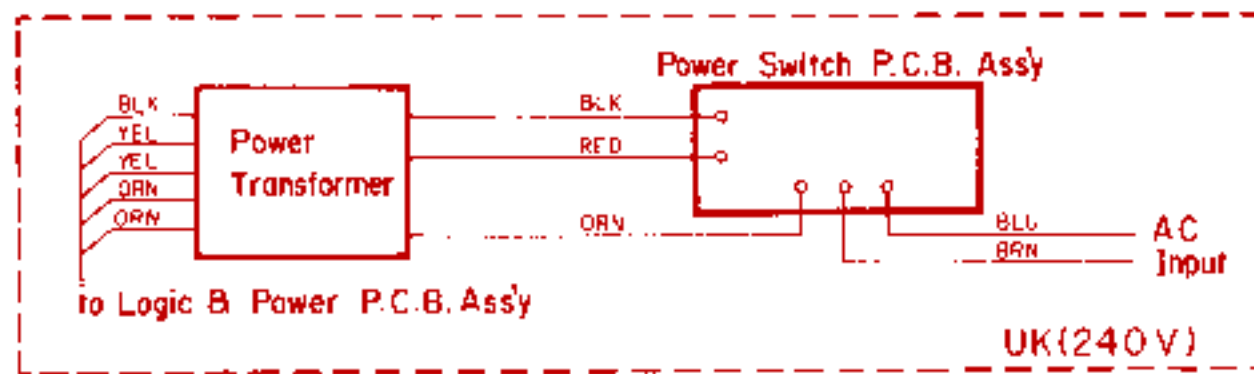


Fig. 7.5



Notes: 1. Diode is 1S553, 1S953, or 1S1555 unless otherwise specified.
 2. Resistor and capacitor marked with * show typical value.

8. WIRING DIAGRAM



Notes: 1. Table of wire colors

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

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

3. Wire tube color is shown in ().

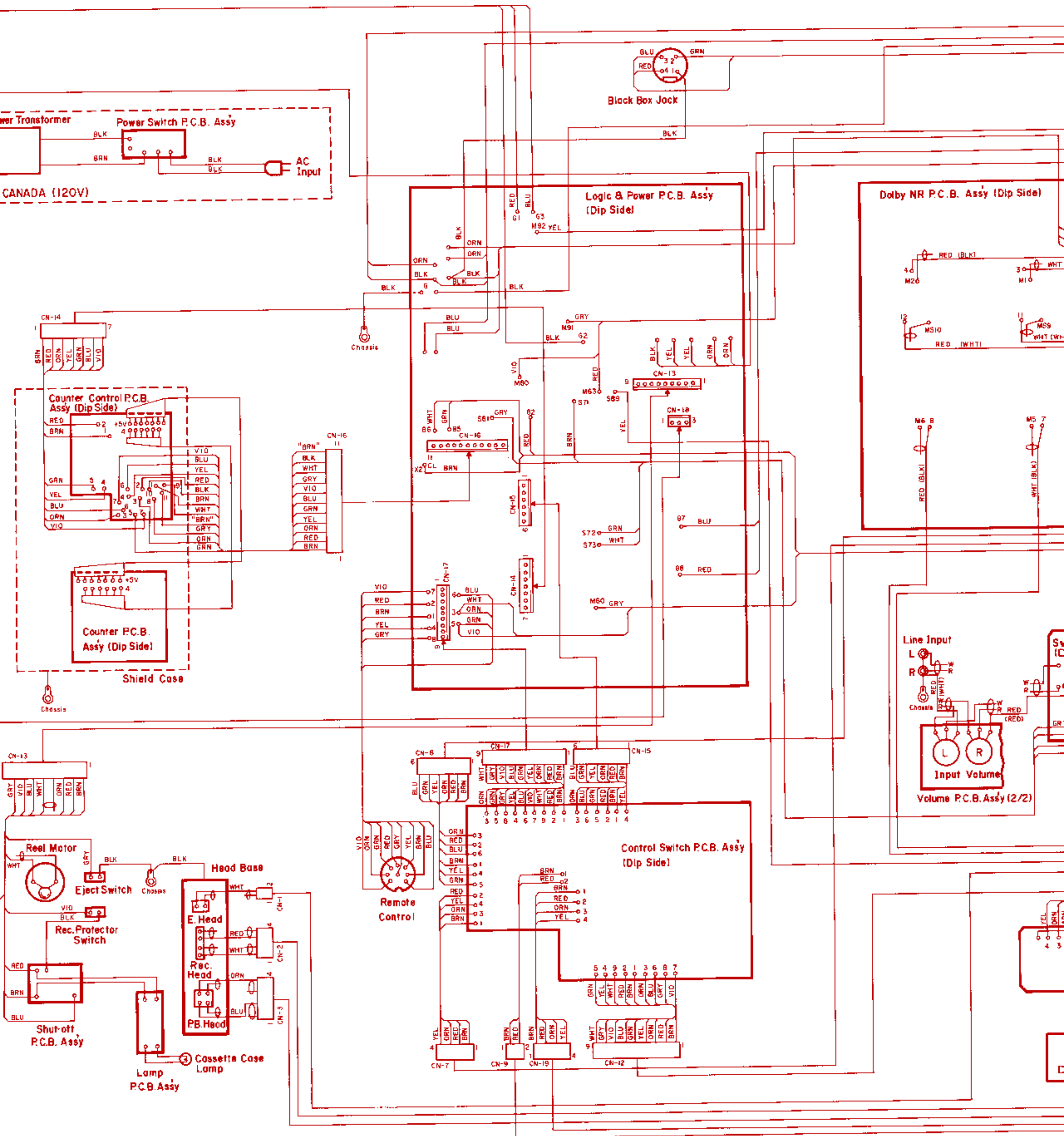


Fig. 8

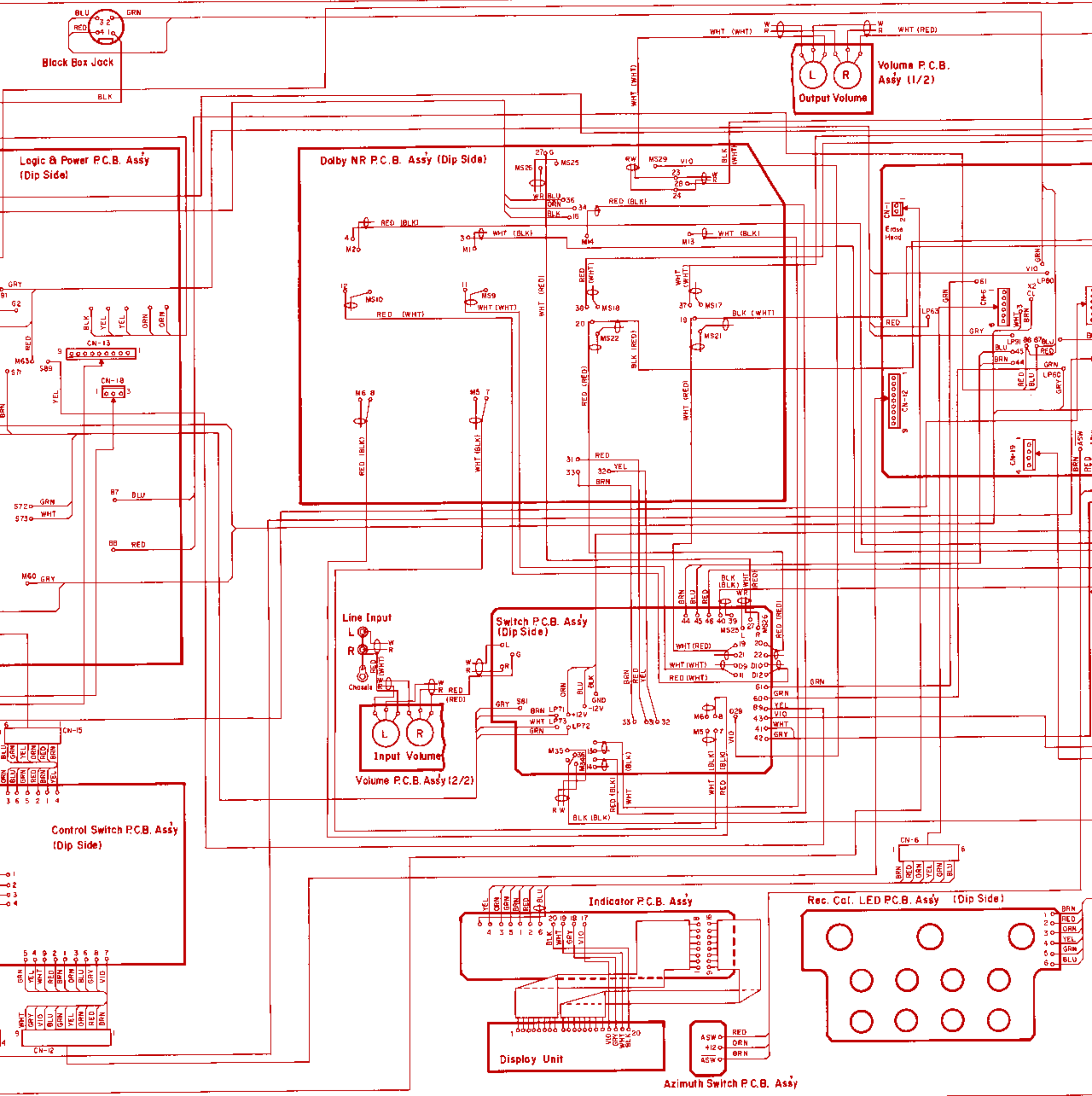


Fig. 8

