



Service Manual

Nakamichi 700ZXL

Computing Cassette Deck



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1. GENERAL

1.1. Control Functions

The Nakamichi 700ZXL control functions are shown below:

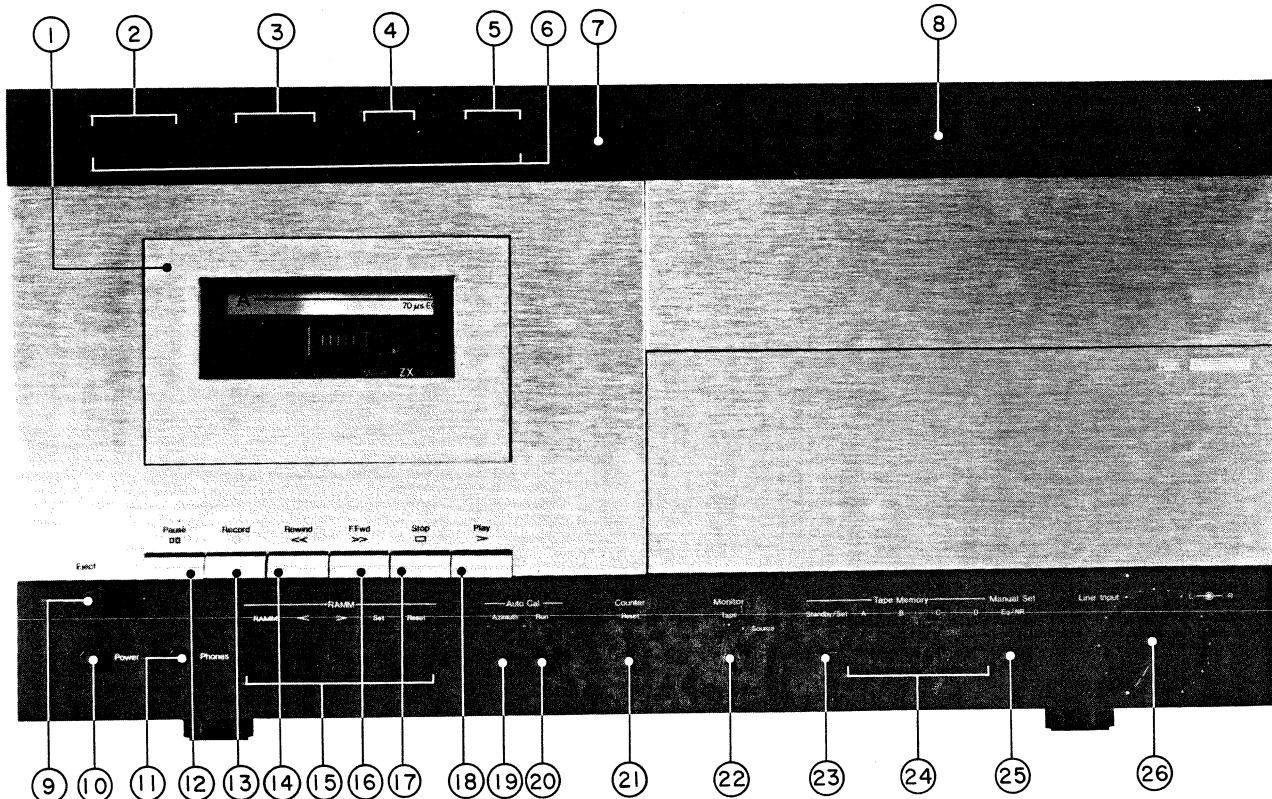


Fig. 1.1 Front View

1. Cassette Holder
2. Auto Calibration Indicator Panel
3. Tape Selector Indicator Panel
4. Playback Equalization Indicator Panel
5. Noise Reduction Indicator Panel
6. RAMM Indicator Panel
7. Tape Counter
8. Level Meters
9. Eject Lever
10. Power Switch
11. Headphone Jack
12. Pause Button
13. Record Button
14. Rewind Button
15. RAMM Control Buttons
16. Fast-Forward Button
17. Stop Button
18. Play Button
19. Auto Azimuth Button
20. Auto Calibration Button
21. Counter Reset Button
22. Monitor Switch
23. Standby/Set Button
24. Tape Memory Buttons
25. Manual Set Button
26. Line Input Level Control

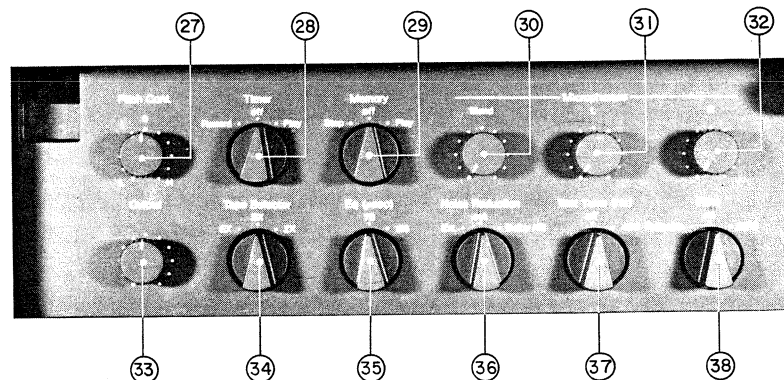


Fig. 1.2 Adjustment Panel

- | | |
|---------------------------------------|----------------------------------|
| 27. Pitch Control | 33. Output Level Control |
| 28. Timer Switch | 34. Tape Selector Switch |
| 29. Memory Switch | 35. Playback Equalization Switch |
| 30. Blend MIC Level Control | 36. Noise Reduction Switch |
| 31. MIC Level Control (Left Channel) | 37. Test Tone Switch |
| 32. MIC Level Control (Right Channel) | 38. Filter Switch |

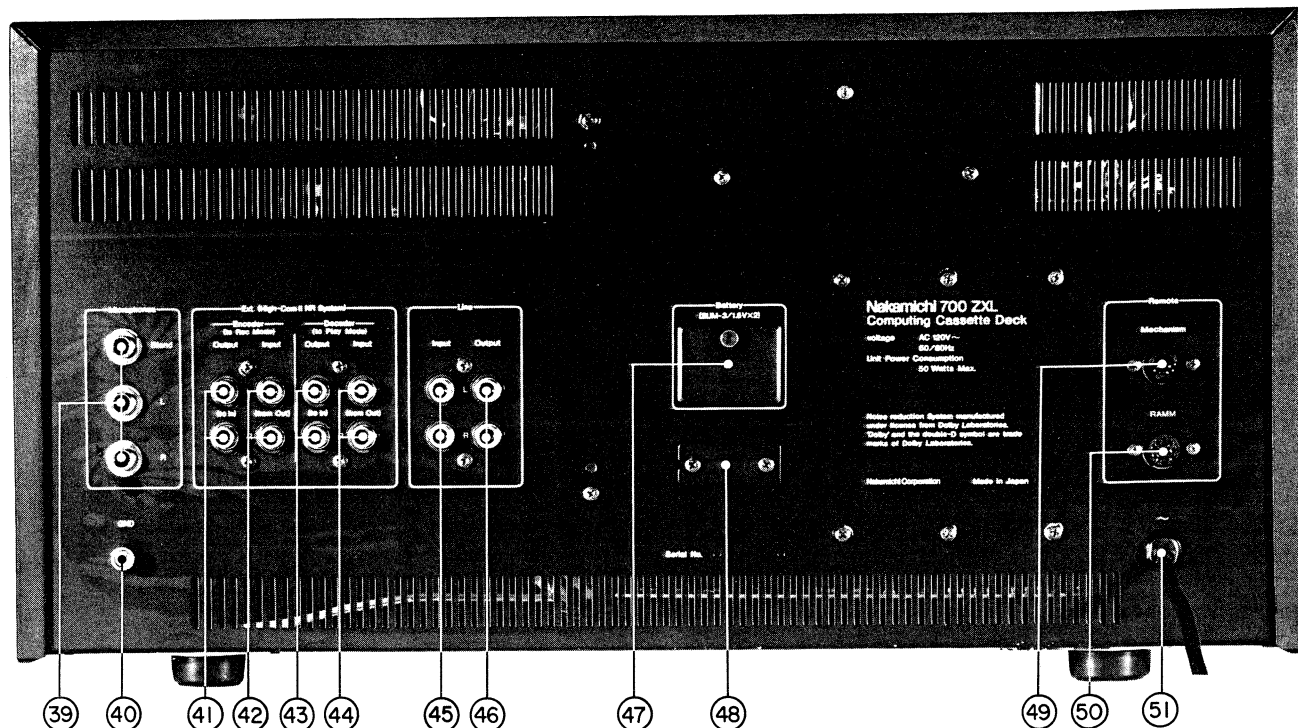


Fig. 1.3 Rear View

- | | |
|--------------------------|-----------------------------------|
| 39. Microphone Jacks | 46. Line Output Jacks |
| 40. Ground Terminal | 47. Battery Compartment |
| 41. Encoder Output Jacks | 48. Voltage Selector |
| 42. Encoder Input Jacks | 49. Mechanism Remote Control Jack |
| 43. Decoder Output Jacks | 50. RAMM Remote Control Jack |
| 44. Decoder Input Jacks | 51. Power Cord |
| 45. Line Input Jacks | |

1.2. Voltage Selector

Voltage selector is installed on the rear panel for Other Version of the Nakamichi 700ZXL. This voltage selector can select either 120 V or 220-240 V at customer's disposal.

1.3. Attention to Servicemen

Before returning the repaired N-700ZXL 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.

2. REMOVAL PROCEDURES

2.1. Top Cover Ass'y

Refer to Fig. 2.1.

- (1) Remove F01 and F02, then disassemble F03 (Top Cover Ass'y).

2.2. Bottom Cover Ass'y

Refer to Fig. 2.1.

- (1) Remove F04, then disassemble F05 (Bottom Cover Ass'y).

2.3. Cassette Case Cover Ass'y

Refer to Fig. 2.1.

- (1) Press the Eject Button as the arrow mark to open the Cassette Case Ass'y.
- (2) Pull out F06 (Cassette Case Cover Ass'y) upwardly.

2.4. Volume Knobs

Refer to Fig. 2.1.

- (1) Pull out F07 (Pitch Control Knob, Output Level Control Knob and MIC Input Level Control Knob).

2.5. Front Panel Ass'y

Refer to Fig. 2.2.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y, Bottom Cover Ass'y and Volume Knobs referring to items 2.1, 2.2 and 2.4.
- (2) Open Adjustment Lid.
- (3) Remove F01, then disassemble the top of F02 (Damper Arm Ass'y) from Front Panel Ass'y.
- (4) Remove F03, then disassemble F04 (Front Panel Ass'y including 4 connectors).

2.6. Control Panel Ass'y

Refer to Fig. 2.2.

- (1) Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F05, then disassemble F06 (Control Panel Ass'y).

2.7. Auto Cal. P.C.B. Ass'y

Refer to Fig. 2.2.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.1. and 2.2.
- (2) Disconnect 4 connectors from F13 (Auto Cal. P.C.B. Ass'y).
- (3) Remove F07 and F08, then loosen F09.
- (4) Turn over F10 (Rear Panel Ass'y) as the arrow head.
- (5) Remove F11 and F12, then disassemble F13 (Auto Cal. P.C.B. Ass'y).

2.8. Mechanism Ass'y

Refer to Fig. 2.2.

- (1) Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F14 and F15, then disassemble F16 (Mechanism Ass'y including 7 connectors).

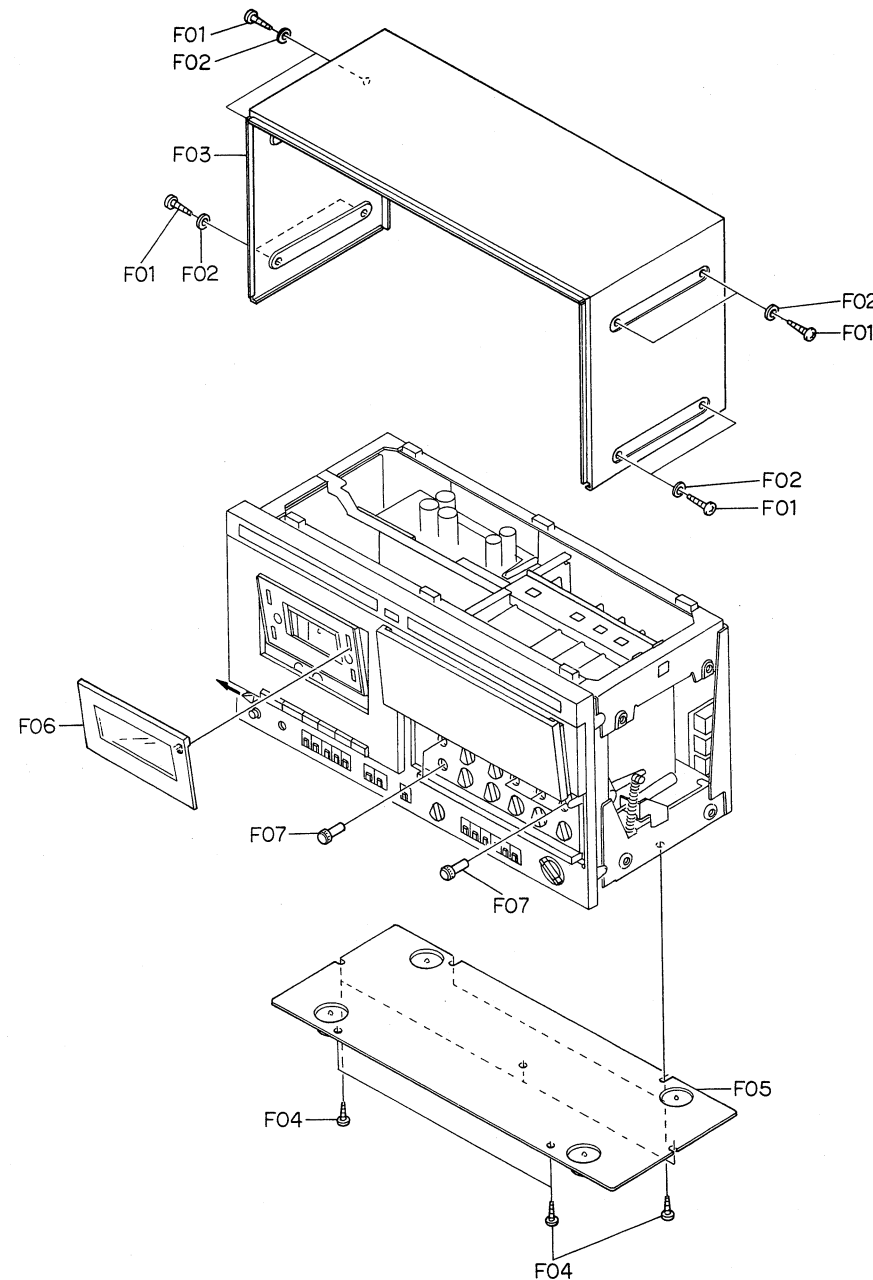


Fig. 2.1

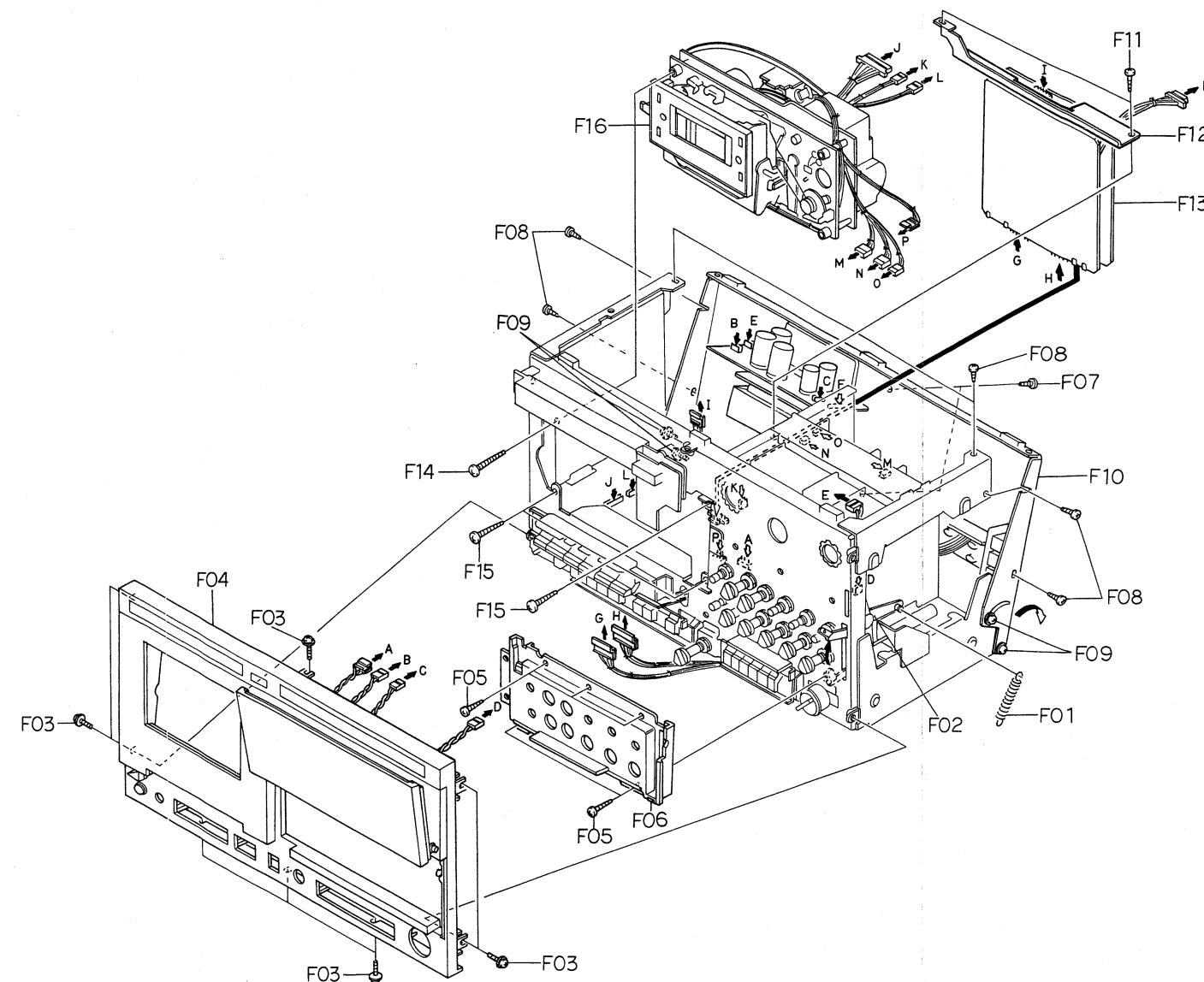


Fig. 2.2

2.9. Counter P.C.B. Ass'y and Lighting House Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F01, then disassemble F02 (Counter P.C.B. Ass'y).
- (3) Remove F03, then disassemble F04 (Lighting House Ass'y including 5 connectors).
- (4) Remove F05, then disassemble F06 (Lamp A P.C.B. Ass'y).
- (5) Remove F07, then disassemble F08 (Lamp B P.C.B. Ass'y).
- (6) Remove F09 and F10, then disassemble F11 (Lamp C P.C.B. Ass'y).

2.10. Control Button Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F12 and F13, then disassemble F14 (Control Button Ass'y including 3 connectors).
- (3) Remove F15, then disassemble F16 (Control Lamp Ass'y).
- (4) Remove F17, then disassemble F18 (Control Switch Ass'y).
- (5) Remove F19 and F20, then disassemble F21 (Switch Lamp A P.C.B. Ass'y).

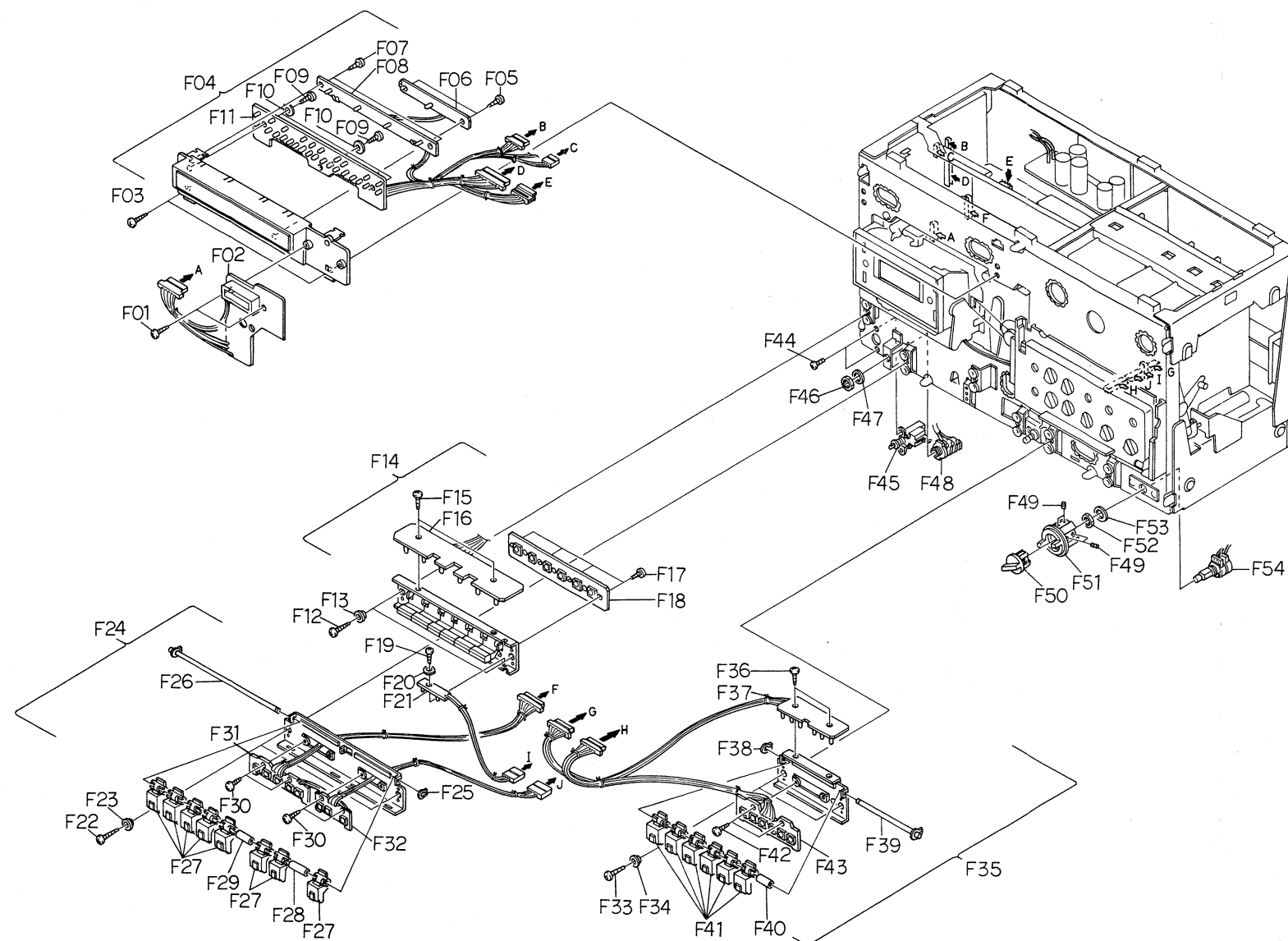


Fig. 2.3

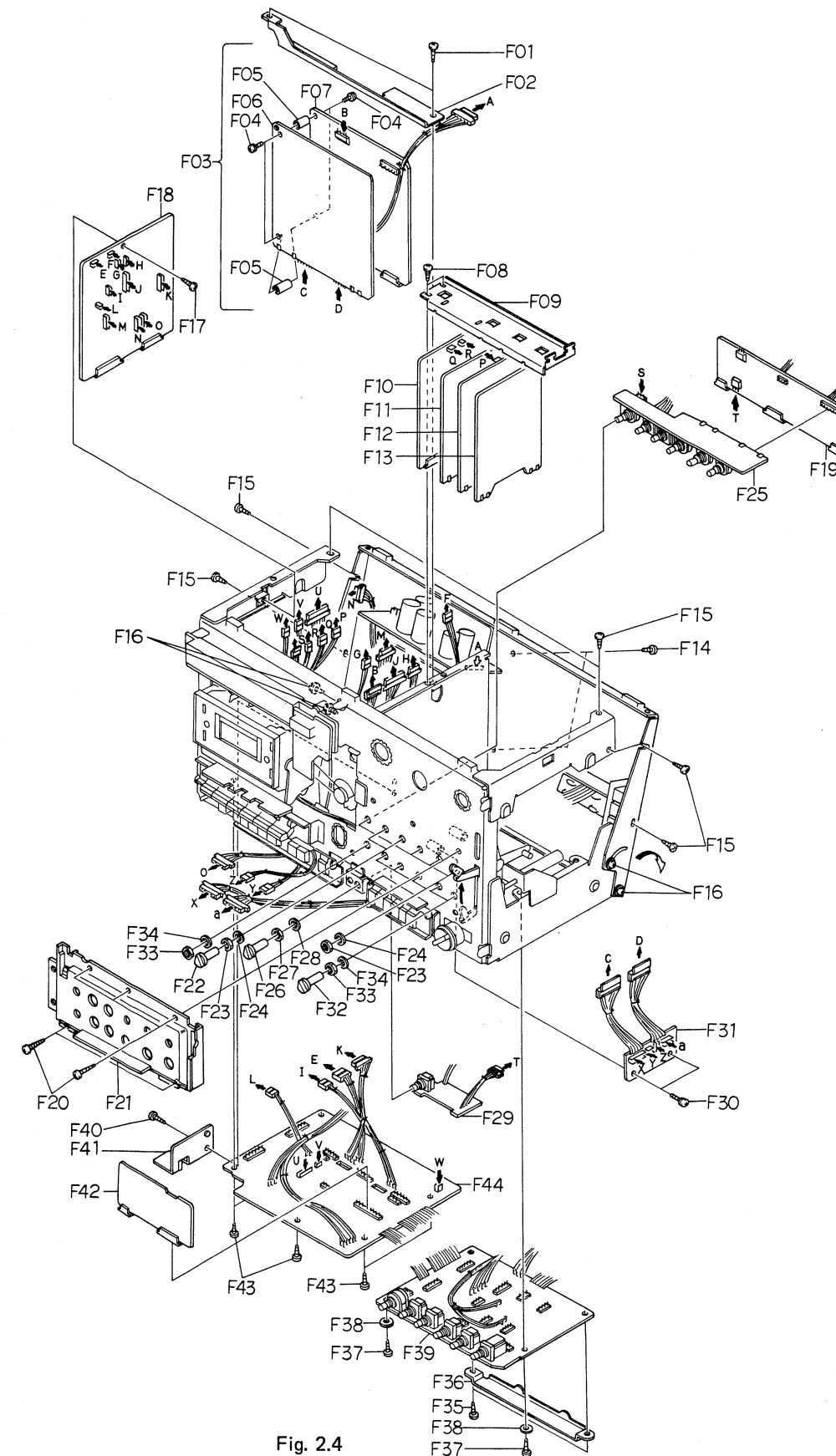


Fig. 2.4

2.11. Push Button A Ass'y, Switch C P.C.B. Ass'y and Switch A P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F22 and F23, then disassemble F24 (Push Button A Ass'y including 2 connectors).
- (3) Remove F25 and F26 (Button Shaft A), then disassemble F27 (Push Button A), F28 (Button Sleeve B) and F29 (Button Sleeve A).
- (4) Remove F30, then disassemble F31 (Switch C P.C.B. Ass'y) and F32 (Switch A P.C.B. Ass'y).

2.12. Push Button B Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F33 and F34, then disassemble F35 (Push Button B Ass'y including 2 connectors).
- (3) Remove F38 and F39 (Button Shaft B), then disassemble F40 (Button Sleeve C) and F41 (Push Button B).
- (4) Remove F42, then disassemble F43 (Switch B P.C.B. Ass'y).

2.13. Power Switch Ass'y, Headphone Jack Ass'y and Line Input Volume

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F44, then disassemble F45 (Power Switch Ass'y).
- (3) Remove F46 and F47, then disassemble F48 (Headphone Jack Ass'y).
- (4) Remove F49, then disassemble F50 (Volume Knob R Ass'y), F51 (Volume Knob L Ass'y), F52, F53 and F54 (Line Input Volume).

2.14. Auto Cal. A P.C.B. Ass'y and Auto Cal. B P.C.B. Ass'y

Refer to Fig. 2.4.

- (1) Refer to Fig. 2.1. Remove Top and Bottom Cover Ass'y referring to items 2.1 and 2.2.
- (2) Remove F01 and F02 (P.C.B. Holder B Ass'y), then disassemble F03 (Auto Cal. Ass'y including 4 connectors).
- (3) Remove F04 and F05 (P.C.B. Spacer), then disassemble F06 (Auto Cal. A P.C.B. Ass'y) and F07 (Auto Cal. B P.C.B. Ass'y).

2.15. Record Eq. Amp. P.C.B. Ass'y, Oscillator P.C.B. Ass'y, Record Dolby NR P.C.B. Ass'y and Playback Amp. & Dolby NR P.C.B. Ass'y

Refer to Fig. 2.4.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y referring to item 2.1.

- (2) Remove F08 and F09 (P.C.B. Holder A Ass'y), then disassemble F10 (Oscillator P.C.B. Ass'y), F11 (Record Eq. Amp. P.C.B. Ass'y), F12 (Playback Amp & Dolby NR P.C.B. Ass'y) and F13 (Record Dolby NR P.C.B. Ass'y).

2.16. RAMM P.C.B. Ass'y

Refer to Fig. 2.4.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y referring to item 2.1.
- (2) Remove F17, then disassemble F18 (RAMM P.C.B. Ass'y).

2.17. MIC & Meter Amp. P.C.B. Ass'y, MIC Volume & Switch P.C.B. Ass'y, Control Panel Ass'y, Line Amp. P.C.B. Ass'y, Connector P.C.B. Ass'y and Mother P.C.B. Ass'y

Refer to Fig. 2.4.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove Record Eq. Amp. P.C.B. Ass'y, Oscillator P.C.B. Ass'y, Record Dolby NR P.C.B. Ass'y and Playback Amp. & Dolby NR P.C.B. Ass'y referring to item 2.15.
- (3) Remove F14 and F15, then loosen F16.
- (4) Turn over Rear Panel Ass'y as an arrow head.
- (5) Disconnect F19 (MIC & Meter Amp. P.C.B. Ass'y) from F25 (MIC Volume & Switch P.C.B. Ass'y).
- (6) Remove F20, then disassemble F21 (Control Panel Ass'y).
- (7) Remove F22 (Switch Knob), F23 and F24, then disassemble F25 (MIC Volume & Switch P.C.B. Ass'y).
- (8) Remove F26, F27 and F28, then disassemble F29 (Line Amp. P.C.B. Ass'y).
- (9) Remove F30 (Switch Knob), then disassemble F31 (Connector P.C.B. Ass'y including 6 connectors).
- (10) Remove F32, F33 and F34.
- (11) Remove F35, F36 (P.C.B. Stopper), F37 and F38, then disassemble F39 (Mother P.C.B. Ass'y).

2.18. Main Logic P.C.B. Ass'y and Sub Logic P.C.B. Ass'y

Refer to Fig. 2.4.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove Auto Cal. P.C.B. Ass'y referring to item 2.7.
- (3) Remove F15, then loosen F16.
- (4) Turn over Rear Panel Ass'y as an arrow mark.
- (5) Remove F40 and F41 (Sub Logic Holder), then disassemble F42 (Sub Logic P.C.B. Ass'y).
- (6) Remove F43, then disassemble F44 (Main Logic P.C.B. Ass'y including 9 connectors).

2.19. LED Level Indicator Ass'y, Indicator P.C.B. Ass'y and Lamp B P.C.B. Ass'y

Refer to Fig. 2.5.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F01, then disassemble F02 (LED Level Indicator Ass'y).
- (3) Remove F03, then disassemble F04 (LED Indicator Case Holder).
- (4) Remove F05, then disassemble F06 (Shield Plate).
- (5) Remove F07 and F08, then disassemble F09 (Indicator P.C.B. Ass'y) and F10 (LED Indicator Case).
- (6) Remove F11, then disassemble F12 (Lamp B P.C.B. Ass'y).
- (7) Remove F13, then disassemble F14 (Lamp B).

2.20. Rear Panel Ass'y, Power Supply P.C.B. Ass'y, Fuse P.C.B. Ass'y and Power Transformer

Refer to Fig. 2.6.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.1 and 2.2.
- (2) Remove F01, F02 and F03, then disassemble Rear Panel Ass'y.

- (3) Remove F04, then disassemble F05 (Power Supply Ass'y).
- (4) Remove F06, then disassemble F07 (Insulator).
- (5) Remove F08, F09 and F10, then disassemble F11 (Heat Sink) and F12 (Power Supply P.C.B. Ass'y).
- (6) Remove F13, then disassemble F14 (Fuse P.C.B. Ass'y).
- (7) Remove F15, then disassemble F16 (Power Transformer Ass'y).
- (8) Remove F17 and F18, then disassemble F19 (Power Transformer) and Transformer Holder.

2.21. Cassette Case Ass'y and Cover Plate Ass'y

Refer to Fig. 2.7.

- (1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.8. Press Eject Lever to open Cassette Case Ass'y.
- (2) Remove F01 and F02, then disassemble F03 (Cassette Case Holder L Ass'y) and F04 (Cassette Case Ass'y).
- (3) Remove F05, then disassemble F06 (Cover Plate Ass'y).

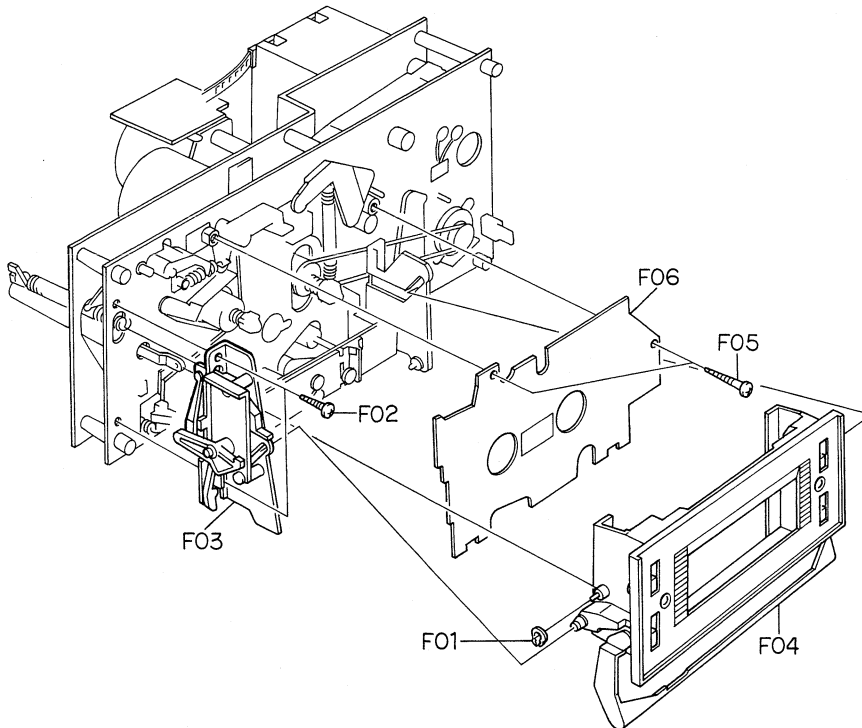


Fig. 2.7

2.22. Speed Cal. P.C.B. Ass'y

Refer to Fig. 2.8.

- (1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.8.
- (2) Remove F01, then disassemble F02 (Speed Cal. P.C.B. Ass'y).
- (3) Remove F03, then disassemble F04 (P.C.B. Holder).

2.23. Capstan Motor Ass'y and Flywheel Ass'y

Refer to Fig. 2.8.

- (1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.8.
- (2) Remove F05 and F06, then disassemble F07 (Capstan Motor Ass'y) and F10 (Capstan Belt).
- (3) Remove F08, then disassemble F09 (Capstan Motor).
- (4) Remove F11 (Supply Flywheel Ass'y), then disassemble F12 (Take-up Flywheel Ass'y).
- (5) After removing both Flywheel Assemblies, disassemble F13 (Thrust Washer 3mm), F14 (Thrust Washer 2.6 mm), F15 (Flang Thrust Cap) and F16 (Thrust Spring).

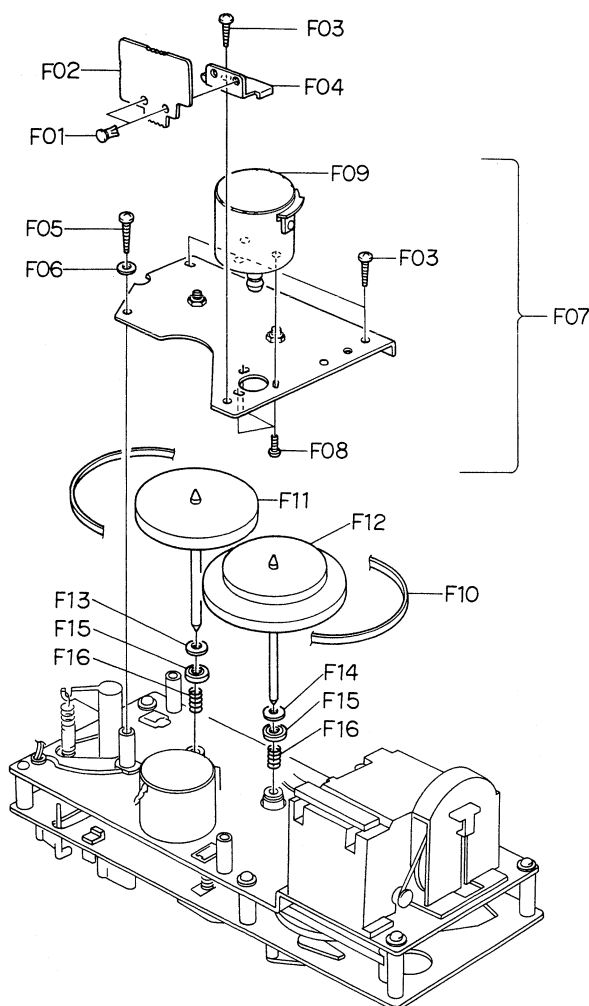


Fig. 2.8

2.24. Sub Mechanism Chassis Ass'y

Refer to Fig. 2.9.

- (1) Refer to Fig. 2.8. Remove Flywheel Ass'y referring to item 2.23.
- (2) Remove F01 and F02, then disassemble F03 (Sub Mechanism Chassis Ass'y).

2.25. Control Motor Ass'y and Reel Motor Ass'y

Refer to Fig. 2.9.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
- (2) Remove F04, then disassemble F05 (Control Motor Ass'y).
- (3) Remove F06, then disassemble F07 (Reel Motor Ass'y).

2.26. Cam Control Volume

Refer to Fig. 2.9.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
- (2) Remove F08, then disassemble F09 (Volume Coupler).
- (3) Remove F10, then disassemble F11 (Cam Control Volume).

2.27. Azimuth Motor Ass'y

Refer to Fig. 2.9.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
- (2) Remove F12, then disassemble F13 (Azimuth Alignment Motor Ass'y).
- (3) Remove F14, then disassemble F15 (Azimuth Motor Ass'y) and F16 (Drive Pulley Ass'y).

2.28. Reel Hub Ass'y and Idler Ass'y

Refer to Fig. 2.9.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
- (2) Remove F17 (Reel Hub Head), then disassemble F18 (Reel Hub B Ass'y), F19 (Reel Hub Take-up Ass'y), F20 (Reel Hub Supply Ass'y), F21 (Back Tension Ass'y) and F22 (Back Tension Spring).
- (3) Remove F23, then disassemble F24 (Idler Ass'y).

2.29. Cam Drive Gear and Control Cam

Refer to Fig. 2.9.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
- (2) Remove F25, then disassemble F26 (Cam Drive Gear).
- (3) Remove F27, then disassemble F28 (Counter-Load Arm Ass'y).
- (4) Remove F29, then disassemble F30 (Control Cam).

2.30. Counter Pulse Generator P.C.B. Ass'y

Refer to Fig. 2.9.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.24.
- (2) Remove F31, then disassemble F32 (Counter Pulse Generator P.C.B. Ass'y).

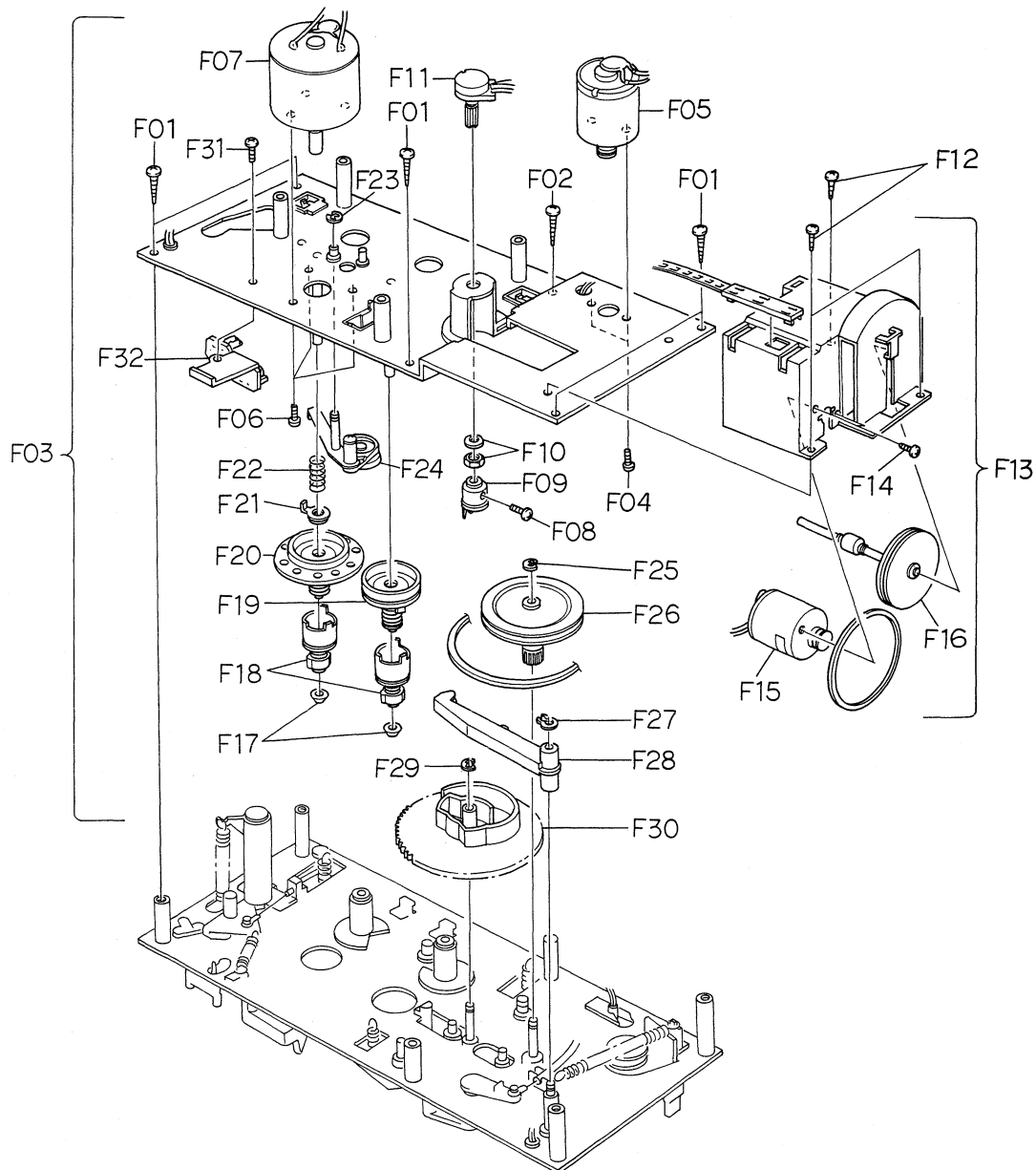


Fig. 2.9

2.31. Head Mount Base Ass'y

Refer to Fig. 2.10.

- (1) Refer to Fig. 2.7. Remove Cassette Case Ass'y referring to item 2.21.
- (2) Remove F01, then disassemble F02 (Head Mount Base Ass'y).

2.32. Pressure Roller Ass'y and Erase Head

Refer to Fig. 2.10.

- (1) Remove Head Mount Base Ass'y referring to item 2.31.
- (2) Remove F03, then disassemble F04 (Supply Pressure Roller Ass'y).
- (3) Remove F05, then disassemble F06 (Erase Head).
- (4) Remove F07, then disassemble F08 (Take-up Pressure Roller Ass'y).

2.33. Playback Head Ass'y and Record Head Ass'y

Refer to Fig. 2.10.

- (1) Remove Head Mount Base Ass'y referring to item 2.31.
- (2) Turn F09 by 90° by pushing it, then disassemble F10 (Playback Head Ass'y).
- (3) Turn F11 by 90° by pushing it, then disassemble F12 (Record Head Ass'y) and F13 (RH Azimuth Alignment Plate).

2.34. Battery

Refer to Fig. 2.11.

- (1) Turn fully counterclockwise the screw which is mounted on the Rear Panel Ass'y, then pull out Battery Case Ass'y.
- (2) Pull up the Ribbon in Battery Case. Take out Batteries of Battery Case.

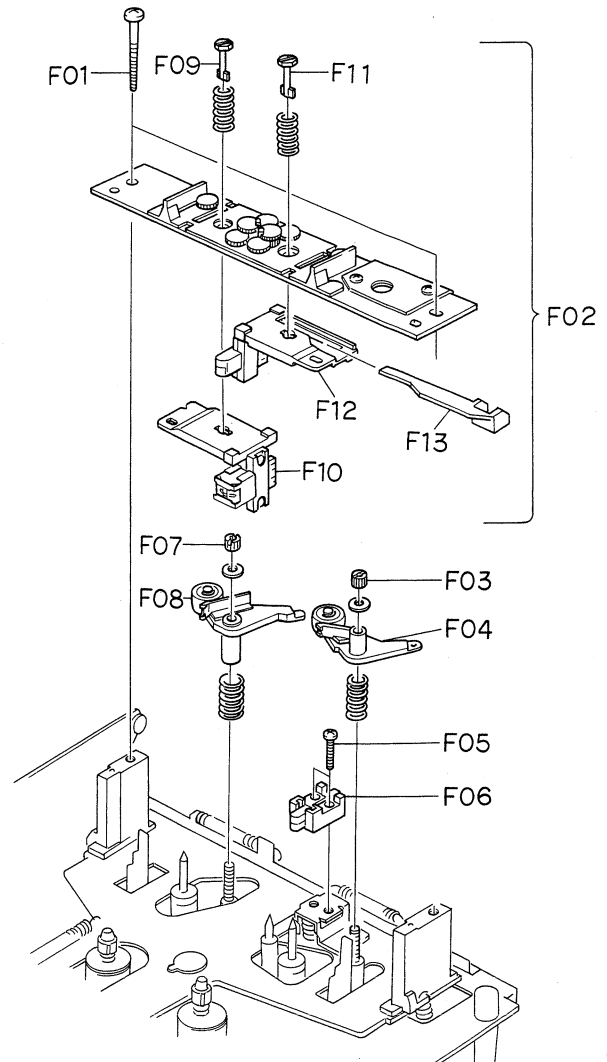


Fig. 2.10

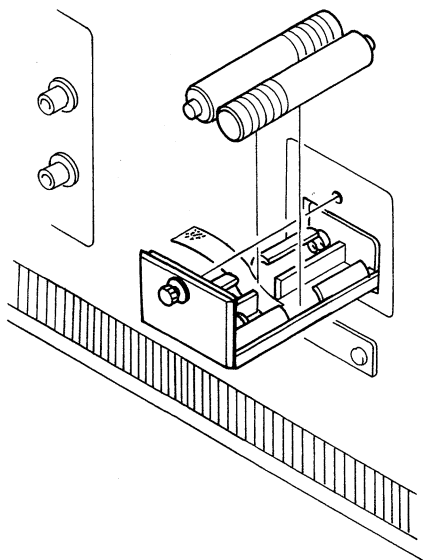


Fig. 2.11

3. MEASUREMENT AND MAINTENANCE INSTRUMENTS

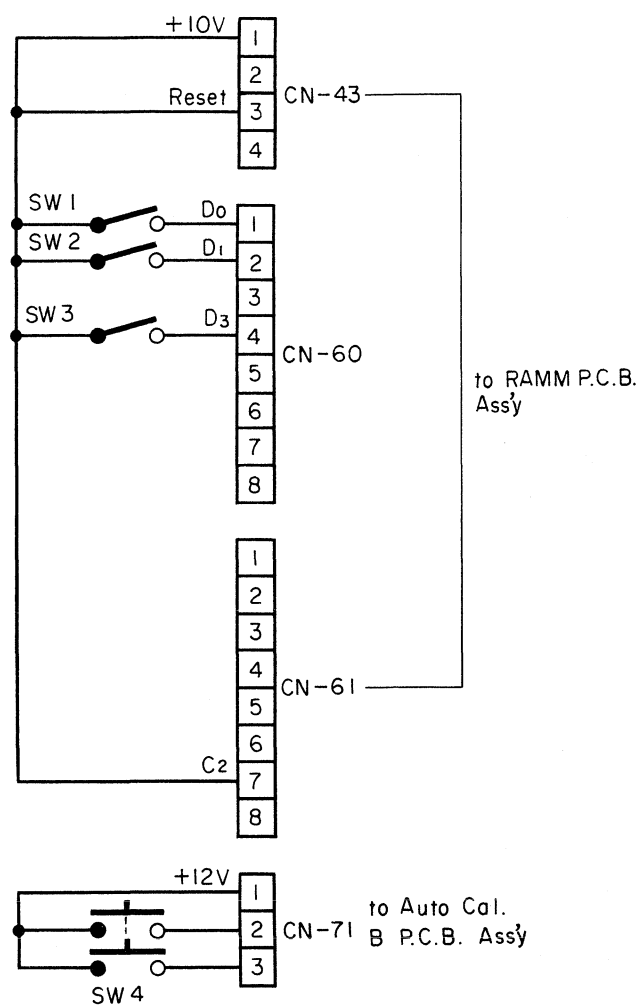
3.1. Measurement Instruments

- (1) Audio Generator (20 Hz – 200 kHz)
- (2) AC Millivolt Meter (with dB measures)
- (3) Oscilloscope (DC – 5 MHz)
- (4) Distortion Meter
- (5) Speed & Wow/Flutter Meter
- (6) Frequency Counter (DC – 10 MHz)
- (7) Ohm Meter
- (8) DC Volt Meter
- (9) AC Volt Meter
- (10) Torque Gauge (DA09013A)
- (11) 15 kHz Azimuth Tape (DA09004A)
- (12) 3 kHz Speed & Wow/Flutter Tape (DA09006A)
- (13) 1 kHz Track Alignment Tape (DA09007A)
- (14) 400 Hz Level Tape (DA09005A)
- (15) 20 kHz PB Frequency Response Tape (DA09001A)
- (16) 15 kHz PB Frequency Response Tape (DA09002A)
- (17) 10 kHz PB Frequency Response Tape (DA09003A)
- (18) Reference EXII Tape (DA09066A)
- (19) Reference SX Tape (DA09025A)
- (20) Reference ZX Tape (DA09037A)
- (21) Tilt Check Gauge M-9039 (DA09039A)
- (22) EH Tilt Check Gauge M-9040 (DA09040A)
- (23) EH Stroke Check Gauge M-9051 (DA09051A)
- (24) Stroke Check Gauge M-9047 (DA09047B)
- (25) Record Head Mounting Gauge M-9048 (DA09048A)
- (26) Back Tension Gauge (DA09055A)
- (27) Tension Arm Adjustment Cassette (DA09056A)
- (28) 5 Hz RAMM Speed Check Tape (DA09061A)
- (29) Test Unit M-9059 (DA09059A)
- (30) Extension Card M-9058 (DA09058A)
(for Playback Amp. & Dolby NR P.C.B. Ass'y)
- (31) Extension Card M-9062 (DA09062A)
(for Record Eq. Amp. P.C.B. Ass'y)
- (32) Extension Card M-9060 (DA09060A)
(for Oscillator P.C.B. Ass'y)
- (33) Audio Analyzer T-100
(including Distortion, Wow/Flutter, Speed, Oscillator and dB meter)

Note: (10) – (33) are the products of Nakamichi Corporation.

3.2. Maintenance Instrument

(1) Test Unit



SW1-3 : Preset Switch (ON/OFF Type)
 SW 4 : Trigger Switch (Momentary Type)

Fig. 3

4. MECHANICAL ADJUSTMENT

4.1. Mechanism Control Cam Adjustment

Before adjustment, disassemble the Front Panel Ass'y, then remove the Cover Plate Ass'y referring to items 2.5 and 2.21.

(1) Offset Adjustment of Control Motor Driver

- (a) Refer to Figs. 4.1 and 4.2.
Adjust VR504 and VR505 on the Main Logic P.C.B. Ass'y to locate approximately at the middle of the variable range. Then press the Power switch.
VR504 (for Cam position play)
VR505 (for Cam position stop)
- (b) Press the Stop button to set the N-700ZXL in Stop mode.
Adjust VR505 (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 N-700ZXL in Playback mode.
(Cam will rotate, and the position marked with "PY" comes to the pointer.) Adjust VR504 (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.)

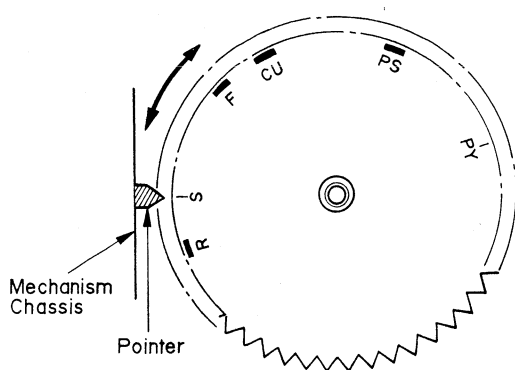


Fig. 4.1

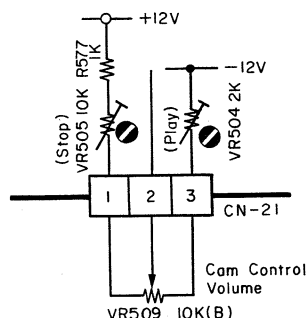


Fig. 4.2

- (e) Set the N-700ZXL in F.F., Pause, or Cue mode by pressing each button (press F.F. and Pause buttons to set the N-700ZXL 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 Main Logic 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 VR509 (10 kΩ) in Stop, Fast (F.F.), Pause and Playback modes.

(b) Reference Voltage

Reference voltage at the sliding contact of VR509 (Cam Control Volume) in each mode is as follows:

Mode	Reference Voltage (Typical Value)
Stop	-0.4 V
Fast (F.F./Rew.)	-2.1 V
Pause	-6.2 V
Play	-8.8 V

1.7 V $\pm$ 0.25 V

2.6 V $\pm$ 0.4 V

(c) Resistors for Adjustment

Mode	Ref. No.	Typical Value
Stop	R691	316 kΩ (F)
Fast (F.F./Rew.)	R555	33 kΩ
Pause	R546	51.1 kΩ (F)
Play	R544	71.5 kΩ (F)

(d) Adjustment Procedures

- 1) Press the Stop button to set the N-700ZXL in Stop mode.
Adjust the value of R691 to obtain -0.4 V ($\pm$ 0.6 V) at the sliding contact of VR509.
Note: When R691 is adjusted, the reference voltage in Fast (F.F. or Rewind) mode is changed. Therefore, re-check of the reference voltage in Fast mode is required. If the reference voltage is out of the range, re-adjustment of R555 according to next step 2) is necessary.
- 2) Set the N-700ZXL in F.F. mode, then adjust the value of R555 so that the voltage of VR509 will become lower by 1.7 V ($\pm$ 0.25 V) than in Stop mode.
- 3) Press the Pause button to set the N-700ZXL in Pause mode.
Adjust the value of R546 to obtain -6.2 V ($\pm$ 0.4, -0.15 V) at the sliding contact of VR509.

- 4) Set the N-700ZXL in Playback mode, then adjust the value of R544 so that the voltage of VR509 will become lower by 2.6 V (± 0.4 V) than in Pause mode.

(3) Cam Timing Adjustment

- (a) Remove the wires from the Control Motor terminals to set the motor open.
- (b) Without loading a cassette tape and with pressing the record protecting switch with your finger tip, press the Record and Play buttons to set the N-700ZXL in Record mode.
- (c) Turn the Cam and bring the "PY" mark toward the pointer by hand. Reel Motor will rotate before the "PY" mark reaches the pointer. Adjust the value of R508 and R509 so that the voltage at the sliding contact of VR509 becomes -7 V (± 0.3 V) when Reel Motor starts rotation.
- (d) Observe the mute signal at the Q517 collector. Turn the Cam referring to above step (c) and check to insure that the voltage at the sliding contact of VR509 is -7.2 V (± 0.3 V) when mute is released (mute signal changes from H to L). (This voltage is determined by the adjustment of R508 and R509 in above step (c).)
- (e) Upon completion of the above adjustment, re-connect wires to the motor terminals.

4.2. Reel Motor Speed Adjustment in Play Mode

Refer to Fig. 4.3.

- (1) Connect a DC voltmeter across the Reel Motor terminals.
- (2) Without loading a cassette tape, set the N-700ZXL in Play mode.
- (3) Adjust VR509 on the Main Logic P.C.B. Ass'y to obtain 4 V on the DC voltmeter.

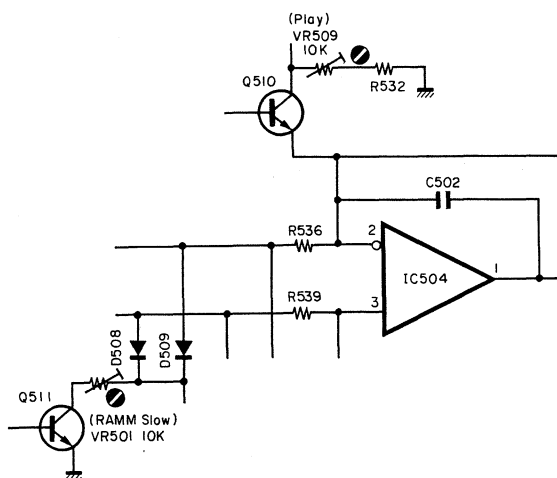


Fig. 4.3

4.3. RAMM Mode Adjustment

Insert connectors CN-43, 60 and 61 of the Test Unit into the connectors CN-43, 60 and 61 of the RAMM P.C.B. Ass'y. After the adjustment is completed, remove the Test Unit.

(1) Head Base Stroke Adjustment in RAMM Cue Mode

Refer to Figs. 4.4 and 4.5

- (a) Load a Stroke Check Gauge M-9047 (DA09047B) in the N-700ZXL.
- (b) Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-700ZXL in RAMM 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 indicates the left side line on the Indicator Plate.
- (d) If the playback head stroke is noted to be misaligned, adjust VR502 on the Main Logic P.C.B. Ass'y till satisfactory results are obtained.
- (e) After completion of the above adjustment, set the N-700ZXL in Stop mode, then set in RAMM mode again to see whether the adjustment is appropriately made.
If not, (b) through (e) will have to be repeated till satisfactory result is obtained.

(2) Reel Motor Speed Adjustment in RAMM Slow Mode

Refer to Fig. 4.3.

- (a) Load a 5 Hz RAMM Speed Check Tape (DA09061A) in the N-700ZXL.
- (b) Connect a Frequency Counter to TP1 on the Main Logic P.C.B. Ass'y.
- (c) Set SW1, SW2 and SW3 of the Test Unit to ON.
- (d) Set the N-700ZXL in Fast (F.F. or Rewind) mode, then adjust VR501 on the Main Logic P.C.B. Ass'y so that the reading of the Frequency Counter becomes in a range of 25 – 50 Hz (typically 37.5 Hz).
After the adjustment, check to insure that the reading is in a range of 25 – 50 Hz at 3 different portions (beginning, middle and end) of the tape.
- (e) In Fast mode, by setting SW3 of the Test Unit to OFF, set the N-700ZXL in RAMM Fast mode.
In this RAMM Fast mode, check to insure that the reading of the Frequency Counter is in a range of 80 – 240 Hz.
If not, repeat (b) – (e) till satisfactory result is obtained.
- (f) Set SW1, SW2 and SW3 of the Test Unit to OFF, then set the N-700ZXL in Stop mode.

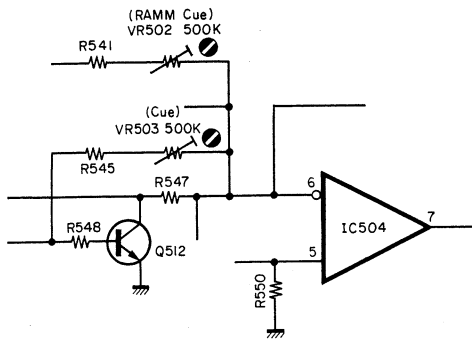


Fig. 4.4

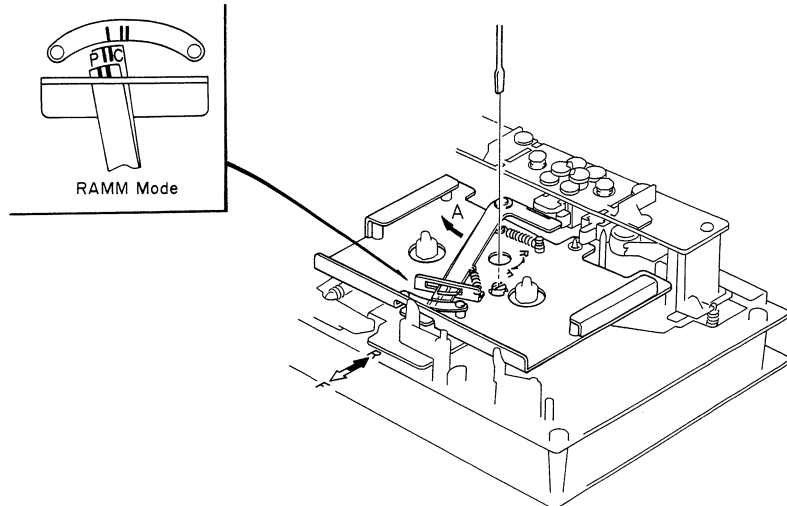


Fig. 4.5

(3) RAMM Detector Amp. Gain Adjustment

Refer to Figs. 4.6 – 4.8.

- Load a 5 Hz RAMM Speed Check Tape (DA09061A) in the N-700ZXL.
- Connect a Synchroscope to TP1 on the Main Logic P.C.B. Ass'y. Set the Synchroscope to DC mode and 1 V/division vertical gain. Check to insure that the minus level (-0.7 to -1.5 V) is observed on the Synchroscope as shown in Fig. 4.6.
- Set SW1, SW2 and SW3 of the Test Unit to ON.
- Set the N-700ZXL in Fast (F.F. or Rewind) mode, then adjust VR506 on the Main Logic P.C.B. Ass'y so that the lowest plus peak value of waveforms does not lower than 2.5 V DC as shown in Fig. 4.7.
- By setting SW3 of the Test Unit to OFF (SW1 and SW2 are ON), set the N-700ZXL in RAMM Fast mode, then check to insure that the lowest plus peak value of waveforms is higher than 0.5 V DC. If not, repeat (c) – (e) till satisfactory result is obtained.
- Set SW1, SW2 and SW3 to OFF, then set the N-700 ZXL in Stop mode.

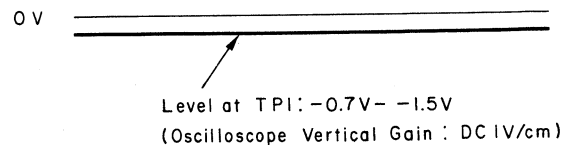


Fig. 4.6

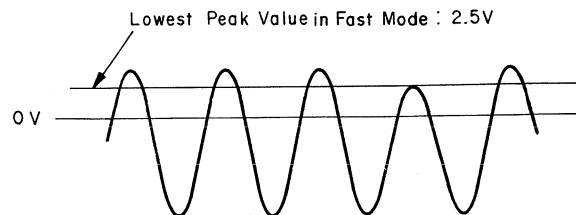


Fig. 4.7

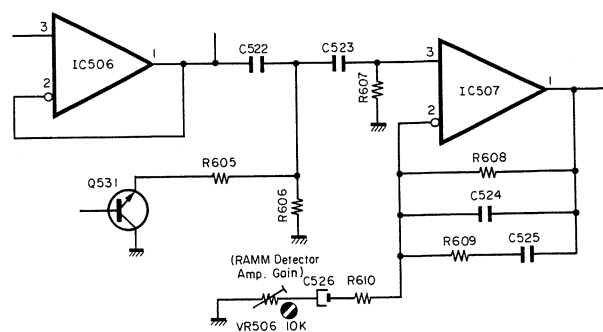


Fig. 4.8

4.4. Record Head and Playback Head Tilt Adjustment

Note: On items 4.4 – 4.10, refer to Fig. 4.9 flow chart.
Refer to Figs. 4.10 and 4.11.

- (1) Load a Tilt Check Gauge M-9039 (DA09039A) in the N-700ZXL.
- (2) Clip the grounding terminal of the Tilt Check Gauge with one end of the cord with clip, and the chassis of the N-700ZXL with the other end.
- (3) Remove both of the Height Gears.
- (4) Set the N-700ZXL 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.
- (5) Check to insure freedom from contact between the Gauge and pad lifter.
- (6) 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 them to the original place.
- (7) Same procedures will apply to the Beacons Record Head "Upper" and "Lower", except for the height adjustment screw (R).
- (8) Set the N-700ZXL in Stop mode and fit both of the serrated height gears. Then set the N-700ZXL 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.

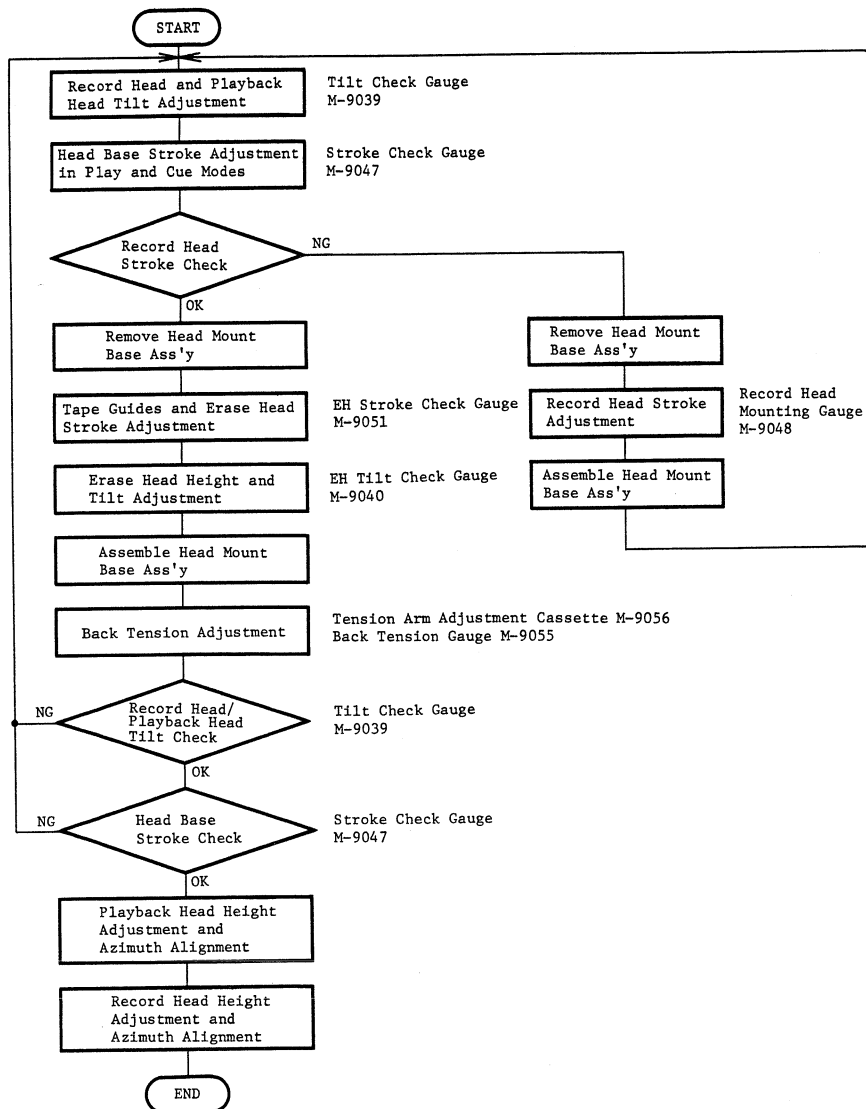


Fig. 4.9

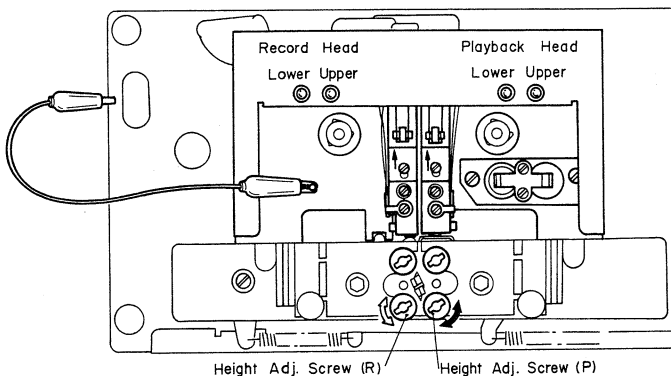


Fig. 4.10

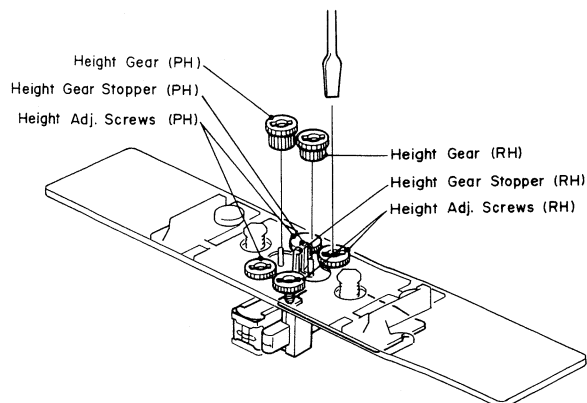


Fig. 4.11

4.5. Head Base Stroke Adjustment

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

Refer to Fig. 4.12.

- Load a Stroke Check Gauge M-9047 (DA09047A) in the N-700ZXL.
- Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-700ZXL in Play mode. Then slowly release the Indicators and insure whether each of the Indicators is in contact with record and playback heads.
- Check to insure whether the "P" pointer on the Playback Head Indicator locates between the 2 lines on the Indicator Plate.
- 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).
- 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.
- If the record head stroke is noted to be misaligned, adjustment can be made with a Record Head Mounting Gauge M-9048 (DA09048A).

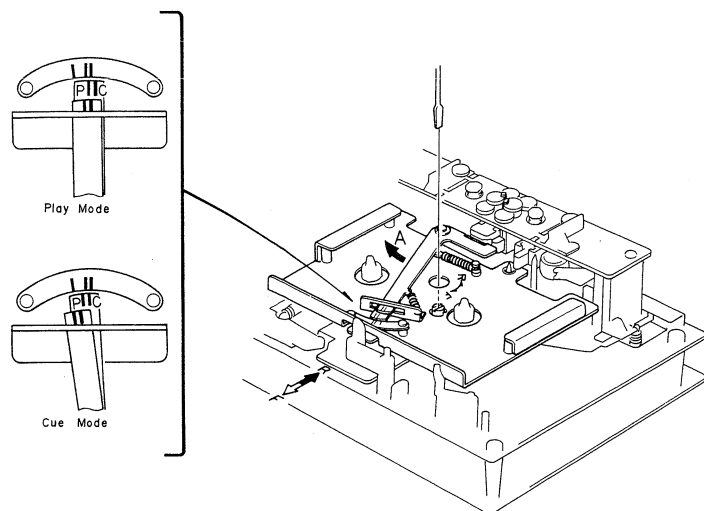


Fig. 4.12

(2) Head Base Stroke Adjustment in Cue Mode

Refer to Figs. 4.12 and 4.13.

- Load a Stroke Check Gauge M-9047 (DA09047B) in the N-700ZXL.
- Move Recourd Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-700ZXL 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.
- Check to insure whether the "C" pointer on the Playback Head Indicator locates between the 2 lines on the Indicator Plate.
- If the playback head stroke is noted to be misaligned, adjust VR503 on the Main Logic P.C.B. Ass'y till satisfactory results are obtained.
- 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.

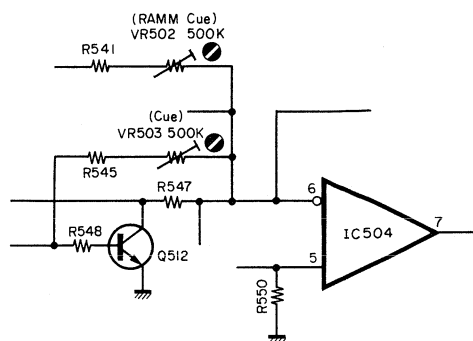


Fig. 4.13

4.6. Tape Guides Adjustment and Erase Head Stroke Adjustment

Remove Head Mount Base Ass'y referring to item 2.31. Refer to Figs. 4.14 and 4.15.

(1) Supply Tape Guide Height Adjustment

- (a) Load an EH Stroke Check Gauge M-9051 (DA-09051A) in the N-700ZXL.
- (b) Set the N-700ZXL in Play mode.
- (c) Slide the Supply Tape Guide Check Bar down against the supply tape guide, thus check can be made on supply tape guide height.
- (d) If the supply tape guide is misaligned, the Supply Tape Guide Check Bar will not come into the supply tape guide. If such is noted, turn to adjust the height adjustment nut A till the Supply Tape Guide Check Bar is accepted by the supply tape guide.
- (e) If the above are insured, set the N-700ZXL in Pause mode, then in Play mode to see whether adjustments are appropriately made. If not, (b) through (e) will have to be repeated till satisfactory results are obtained.

(2) Take-up Tape Guide Height Adjustment

- (a) Load an EH Stroke Check Gauge M-9051 (DA-09051A) in the N-700ZXL.

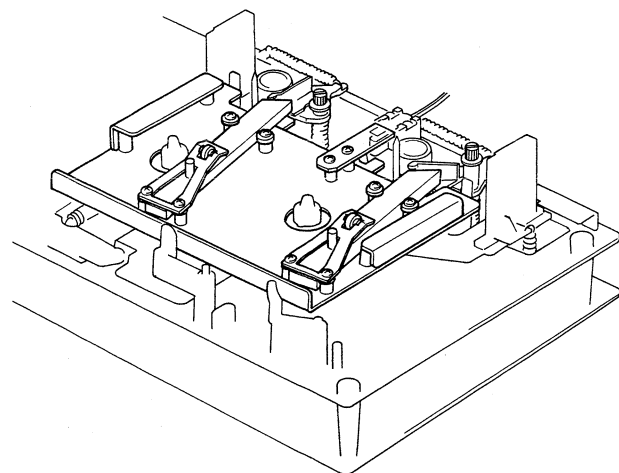


Fig. 4.14

- (b) Set the N-700ZXL in Play mode.
- (c) Slide the Take-up Tape Guide Check Bar down against the take-up tape guide, thus check can be made on take-up tape guide height.
- (d) If the take-up tape guide is misaligned, the Take-up Tape Guide Check Bar will not come into the take-up tape guide. If such is noted, turn to adjust the height adjustment nut C till the Take-up Tape Guide Check Bar is accepted by the take-up tape guide.
- (e) If the above are insured, set the N-700ZXL in Pause mode, then in Play mode to see whether adjustments are appropriately made. If not, (b) through (e) will have to be repeated till satisfactory results are obtained.

(3) Erase Head Stroke Adjustment

- (a) Load an EH Stroke Check Gauge M-9051 (DA-09051A) in the N-700ZXL.
- (b) Set the N-700ZXL 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 B that assemble erase head and erase head plate.
- (d) After completion of adjustment, 2 pcs. of screws shall be locked with lock tight paint.

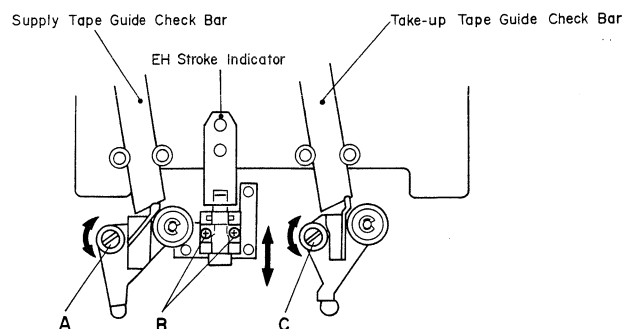


Fig. 4.15

4.7. Erase Head Height and Tilt Adjustment

Refer to Figs. 4.16 and 4.17.

- (1) Remove Head Mount Base Ass'y referring to item 2.31.
- (2) Load an EH Tilt Check Gauge M-9040 (DA09040A) in the N-700ZXL.
- (3) Set the N-700ZXL 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 should be locked with lock tight paint.

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

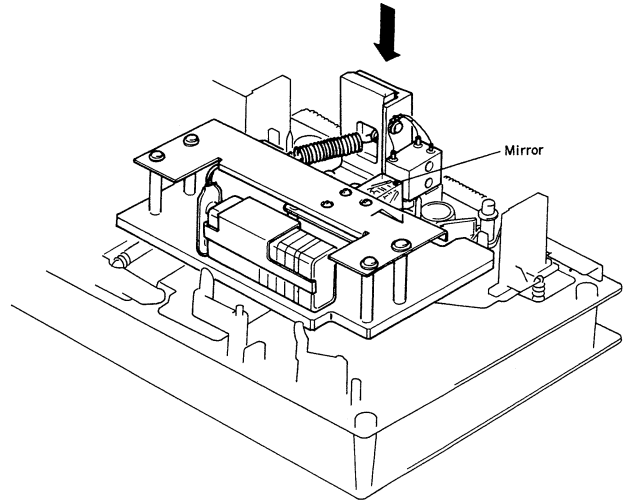


Fig. 4.16

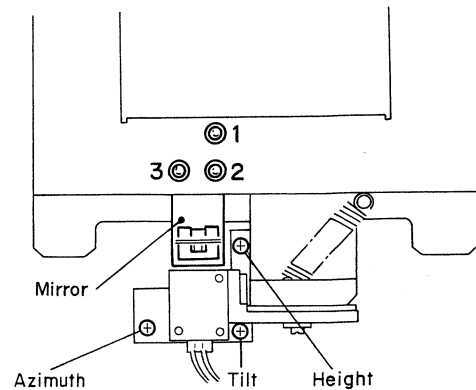


Fig. 4.17

4.8. Back Tension Adjustment

Refer to Figs. 4.18 – 4.21.

- (1) Load a Tension Arm Adjustment Cassette (DA 09056A) in the N-700ZXL referring to Fig. 4.18.
- (2) Set the N-700ZXL 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. 4.19. Do not bend the pointed end of the Back Tension Arm.
- (4) Set the N-700ZXL in Stop mode, and remove the Tension Arm Adjustment Cassette (DA09056A), then set the N-700ZXL 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. 4.20.
- (5) Load the Back Tension Gauge (DA09055A) in the N-700ZXL.
- (6) Set the N-700ZXL 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. 4.21, and obtain the torque of 7 g-cm to 9 g-cm range.

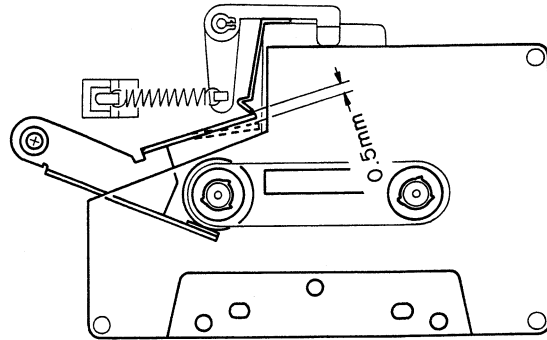


Fig. 4.19

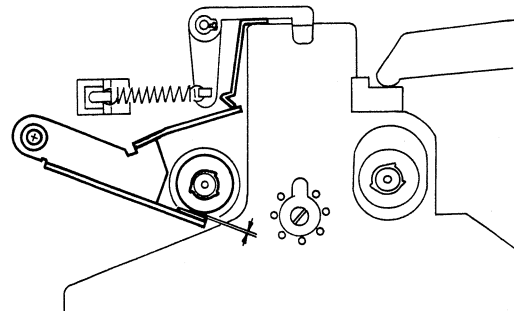


Fig. 4.20

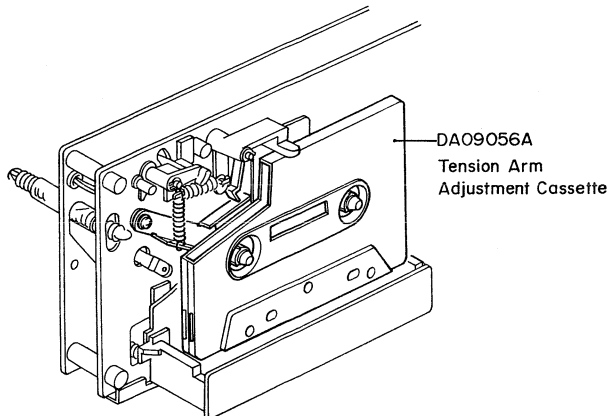


Fig. 4.18

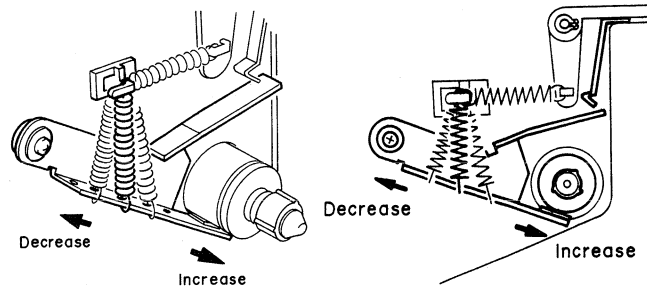


Fig. 4.21

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

(1) Playback Head Height Adjustment and Azimuth Alignment

Refer to Fig. 4.22.

- Set the Monitor switch to Tape, then connect a VTVM to the Line Output Jacks.
- Set the Manual Set button, then set the Eq. switch to 70 μ s and Noise Reduction switch to Out.
- Load a 1 kHz Track Alignment Tape (DA09007A), then set the N-700ZXL in Play mode.
- Turn the PH Height Gear until the outputs of both channels become minimum.
- Load a 15 kHz Azimuth Tape (DA09004A), then set the N-700ZXL in Play mode.
- Turn the PH Azimuth Alignment Screw until the outputs of both channels become maximum.
- Repeat above steps (c) through (f) one or two times to obtain optimum performance.

(2) Record Head Height Adjustment and Azimuth Alignment

Refer to Figs. 4.22 – 4.26.

- Set the N-700ZXL in Stop mode.
Turn the Azimuth Motor in the Azimuth Alignment Motor Ass'y by hand so that the Alignment Indicator corresponds to the pointer of the Azimuth Alignment Motor Ass'y as shown in Fig. 4.23. Remove the Azimuth Alignment Wire by pulling out from the Azimuth Alignment Motor Ass'y. In this case, do not move the Slide Lever of the Azimuth Alignment Wire.
- Set the Monitor switch to Tape, then connect a VTVM to the Line Output Jacks.
- Set the Eq. switch to 70 μ s and Noise Reduction switch to Out.
- Load a Reference SX Tape (DA09025A). Then set the N-700ZXL in Record and Pause mode.
- With Pressing the Auto Calibration button "Run", press the Play button to set the N-700ZXL in Auto Calibration mode.

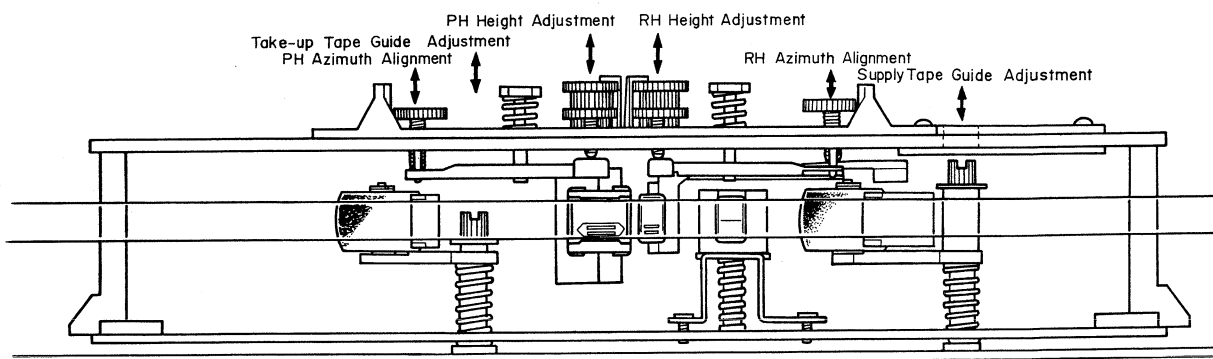


Fig. 4.22

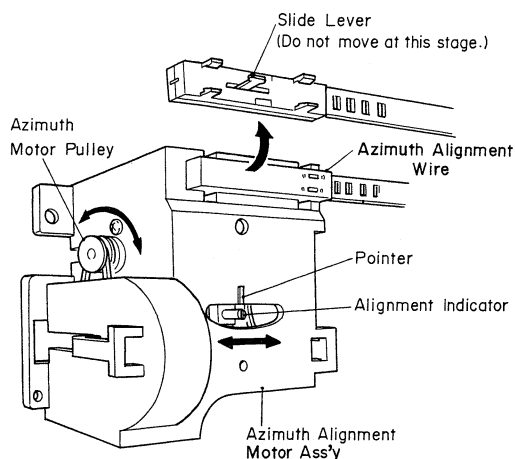


Fig. 4.23

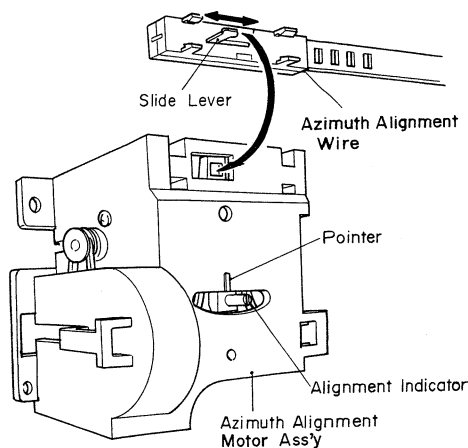


Fig. 4.24

Auto Azimuth button light starts flashing and Azimuth Alignment operation begins.

Referring to Fig. 4.25, adjust VR508 on the Main Logic P.C.B. Ass'y so that the Alignment Indicator corresponds to the pointer of the Azimuth Alignment Motor Ass'y as shown in Fig. 4.23.

- (f) When the Auto Azimuth Alignment operation is completed, Auto Azimuth button light goes out, then Auto Calibration of Bias, Level and Equalization is automatically carried out.
- (g) After completion of the above Auto Calibration, tape is automatically rewound to "0000" and the Standby/Set button light is illuminated.
With pressing the Standby/Set button, press the Tape Memory button A, B, C, or D to store the information (Bias, Level and Equalization).
- (h) Set the Test Tone switch to 400 Hz, then turn the RH Height Gear until the outputs of both channels become maximum.
- (i) Feed in 15 kHz (-20 dB) and set the Test Tone switch to OFF, then set the N-700ZXL in Record and Play mode.
Turn the RH Azimuth Alignment Screw until the outputs of both channels become maximum.
- (j) Repeat above steps (h) and (i) one or two times to obtain optimum performance.
- (k) Set the N-700ZXL in Stop mode, then again set in Record and Pause mode.

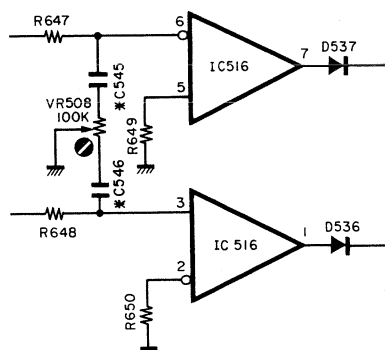


Fig. 4.25

- (l) With pressing the Auto Azimuth button "Azimuth", press the Play button to set the N-700ZXL in Auto Azimuth Alignment mode.

Check to insure whether the Alignment Indicator corresponds to the pointer of the Azimuth Alignment Motor Ass'y in the position of VR508 as adjusted in above step (e). If not, re-adjust VR508 to correspond the Alignment Indicator to the pointer of the Azimuth Alignment Motor Ass'y.

- (m) Set the N-700ZXL in Stop mode.

Mount the Azimuth Alignment Wire on the Azimuth Alignment Motor Ass'y referring to Fig. 4.24. (Correct the position of the Slide Lever of the Azimuth Alignment Wire by sliding by hand, then insert the Slide Lever into the receptacle of the Azimuth Alignment Motor Ass'y.)

- (n) After completion of the above adjustment, record 400 Hz tone to the same portion of both sides A and B of the tape.

- (o) 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. 4.26.

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.

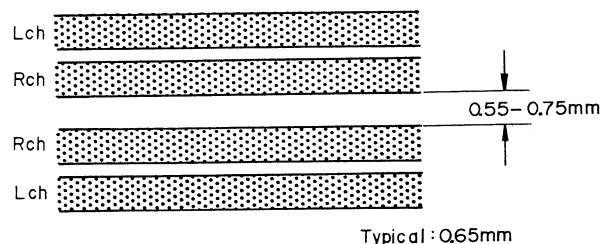


Fig. 4.26

4.10. Record Head Stroke Adjustment

Refer to Figs. 4.27 and 4.28.

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 referring to item 2.31.
- (3) Remove the record head assembly.
- (4) Adjustment 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. 4.27 hold the Gauges (3.05 mm and 0.1 mm thickness) between the Block A and Block B, 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. 4.28, 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 contacts to 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. 4.27 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, fix the Block A with screw, 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 the Fig. 4.28, 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.

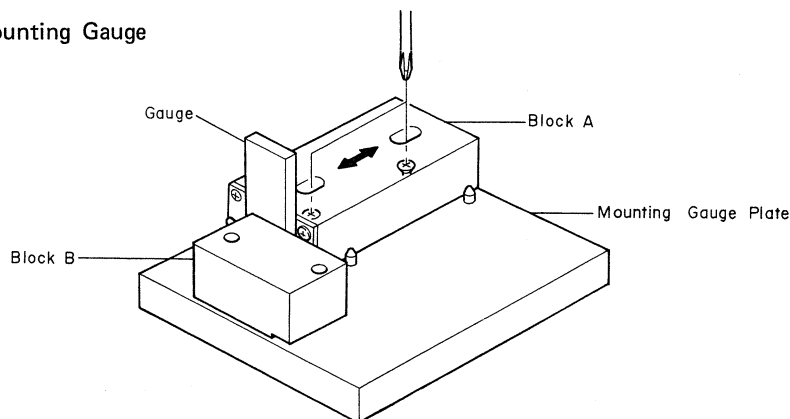
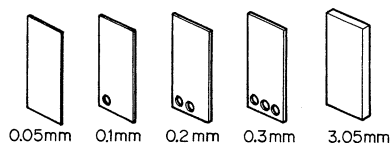


Fig. 4.27

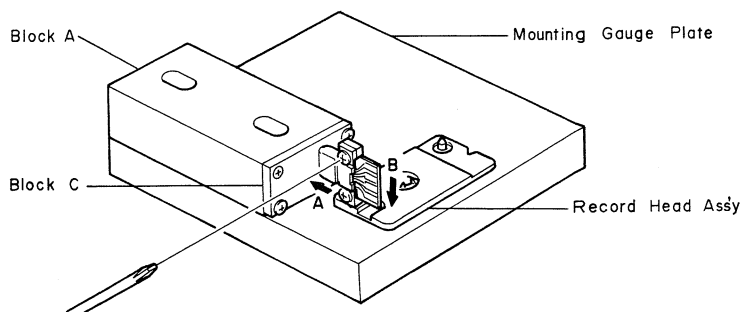


Fig. 4.28

4.11. Tape Travelling Adjustment

The adjustment shall be made with a modified version of the current type EXII C-90 as shown in Fig. 4.29 (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 N-700ZXL.
- (2) Release the back-tension (rotate the Supply Reel and feed out some length of tape) and set the N-700ZXL 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 "4.4. Record Head and Playback Head Tilt Adjustment", "4.5. Head Base Stroke Adjustment", "4.6. Tape Guides Adjustment and Erase Head Stroke Adjustment", "4.7. Erase Head Height and Tilt Adjustment", "4.8. Back Tension Adjustment", "4.9. Playback Head and Record Head Height Adjustment and Azimuth Alignment", "4.10. Record Head Stroke Adjustment", 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 is 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 N-700ZXL 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.

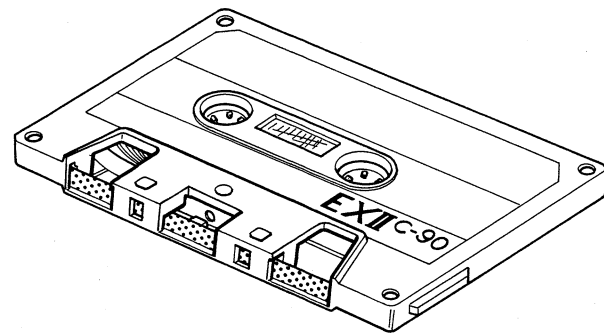


Fig. 4.29

4.12. Flywheel Holder Adjustment

- (1) Refer to Fig. 4.30.

Tighten the Thrust Screws until the gap between the Flywheel Assemblies and Thrust Screws becomes minimized when both of the Capstan Shafts are moved backwardly and forwardly (the Thrust Springs between the Capstan Flanges and Flywheel Thrust Caps are in a flat state).

Excessive tightening of the Thrust Screws however will give damages on the Flywheel Assemblies, to which careful attention is invited.

- (2) Return the Thrust Screws by 1/2 turn.
- (3) Fixing the Thrust Screw with a screwdriver, lock the Lock Nut.
- (4) Apply a quantity of lock tight paint to the Thrust Screws.

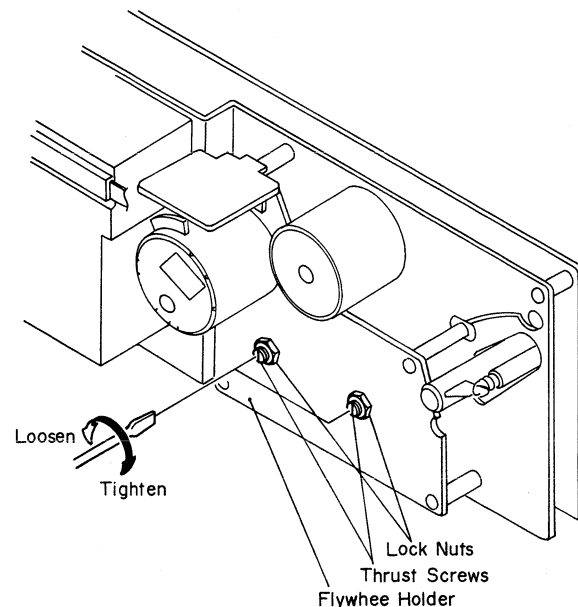


Fig. 4.30

4.13. Adjustment Lid Gap Adjustment

- (1) Remove the Top Cover Ass'y, referring to item 2.1.
- (2) Loosen the screw (A), then slightly loosen the screw (B).
- (3) By turning a screwdriver as shown in Fig. 4.31, adjust the gap (C) at the lower part of the Adjustment Lid until it becomes equal to the gap at the upper part of the Adjustment Lid. Clockwise turning will result in decreasing the gap (C) and vice versa.
- (4) Tighten the 2 screws (A and B).

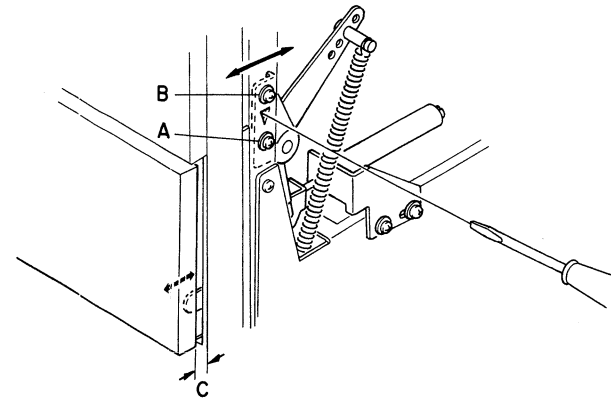


Fig. 4.31

4.14. Tape Speed Adjustment

- (a) Remove the Top Cover Ass'y, referring to item 2.1.
- (b) Connect a Frequency Counter to Line Output Jacks.
- (c) Load a 3 kHz Speed Wow/Flutter Tape (DA09006A) and play it back.
- (d) Referring to Fig. 4.32, adjust the Tape Speed Adjustment Volume VR501 on the Speed Cal. P.C.B. Ass'y to obtain 3,000 Hz on the Frequency Counter.

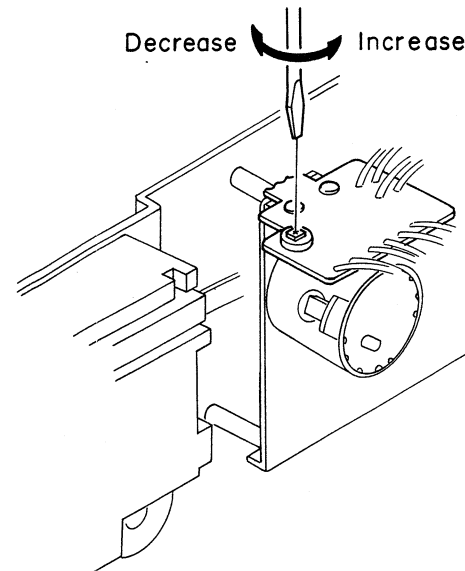


Fig. 4.32

4.15. Lubrication

N-700ZXL 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.
- (3) Silicon Oil #3000CST
Air Damper Piston

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

5. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

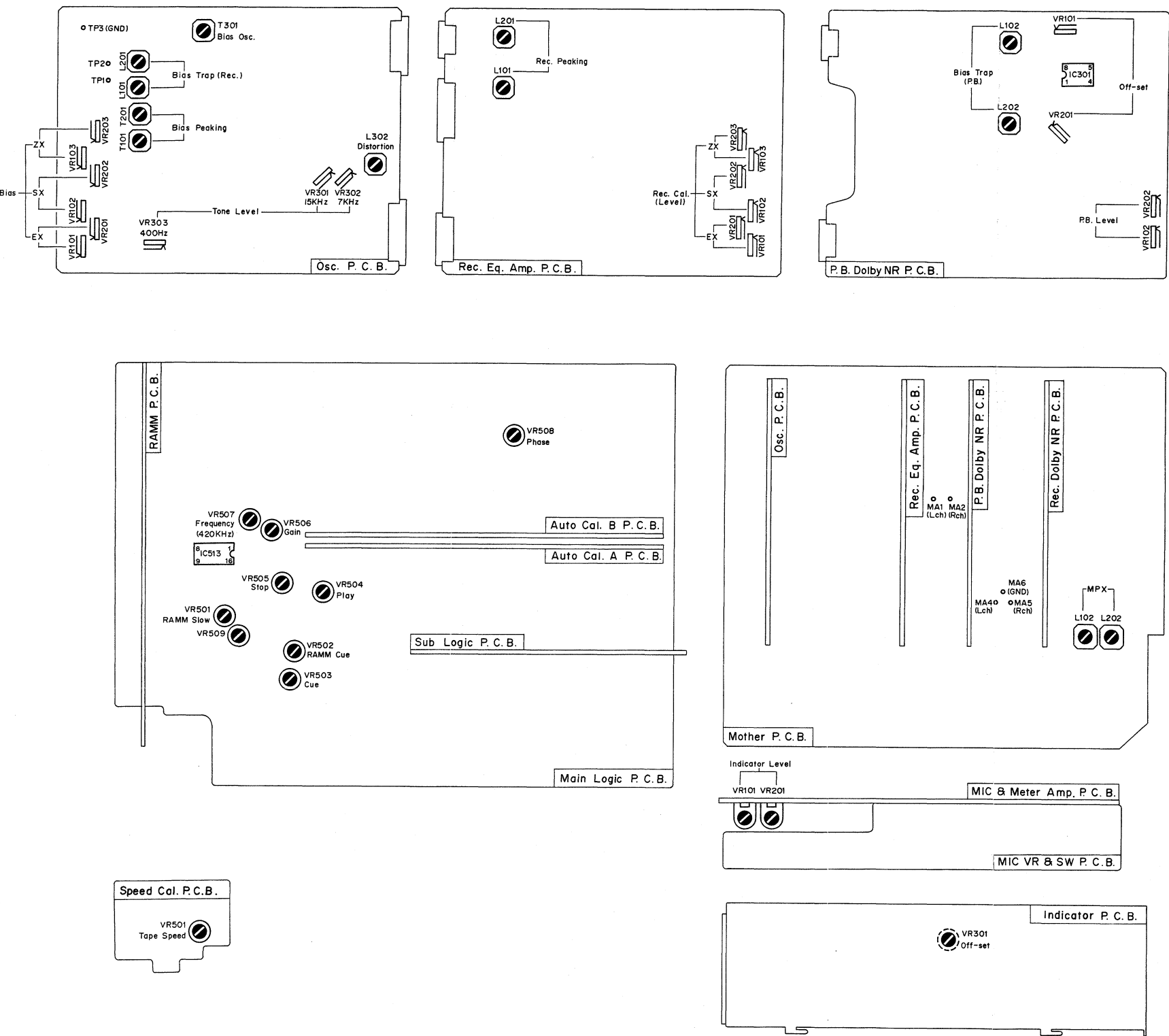


Fig. 5

6. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

6.1. Introduction

The 700 ZXL incorporates a micro-processor which automatically calibrates the bias, level (sensitivity) and recording equalization to achieve an accurate frequency response over 20 Hz – 20 kHz when the auto calibration function is commanded.

Therefore, to adjust the following steps manually, it is necessary to set the circuit in the adjustment condition by using the Test Unit M-9059 (DA09059A).

- Step 12: Bias Oscillation Frequency Adjustment
- Step 13: Maximum Bias Current Adjustment
- Step 14: Bias Trap (Record) Adjustment
- Step 15: Record Amp. Equalizer Adjustment
- Step 17: Record Level Calibration and Recording Bias Current Adjustment

(1) How To Use the Test Unit

- (a) Connect the connector CN-71 of the Test Unit to the test connector CN-71 on the Auto Cal. B P.C.B. Ass'y.
- (b) Set the Tape Selector, Playback Equalization and Noise Reduction switches to the desired position depending upon the tape to be used.
- (c) Press the Tape Memory button A, B, C or D.
- (d) Press SW4 of the Test Unit to ON.

Once the setting is performed, the conditions of the above function switches is fetched and the fixed data of level and bias is set on the Auto Cal. B P.C.B. Ass'y.

RAM (Random Access Memory) IC509 memorizes the condition of tape, eq. and noise reduction, and RAM IC510 and IC511 memorize the fixed level data and the fixed bias data respectively.

Following shows the output conditions of IC510 and IC511:

(Level)		(Bias)
IC510-13 (2^3)=0	R ch.	IC511-13=1
IC510-14 (2^2)=1		IC511-14=1
IC510-15 (2^1)=1		IC511-15=1
IC510-16 (2^0)=1		IC511-16=0
IC510-17 (2^3)=0	L ch.	IC511-17=1
IC510-18 (2^2)=1		IC511-18=1
IC510-19 (2^1)=1		IC511-19=1
IC510-20 (2^0)=1		IC511-20=0

Note: 0: 0 V, 1: +12 V.

- (e) After completion of the adjustment of above steps, remove the connector CN-71 of the Test Unit from the test connector CN-71 on the Auto Cal. B P.C.B. Ass'y.

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

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Tape Speed Adjustment	3 kHz Speed and Wow/Flutter Tape (DA09006A)	Frequency Counter to Line Output Jacks	Playback	Speed Cal. P.C.B. VR501	Adjust VR501 to obtain 3 kHz $\pm 5\%$ on the frequency counter.
2	Playback Amp. Offset Adjustment	None	DC Voltmeter to IC301-7, -1 on Playback Amp. & Dolby NR P.C.B.	Stop	Playback Amp. & Dolby NR P.C.B. VR101, VR201	Adjust VR101 (VR201) to obtain 0 V ± 100 mV on the DC voltmeter.
3	CPU Clock Frequency Adjustment	None	Frequency Counter to IC513-2 (CN54-3) on Main Logic P.C.B.	Stop	Main Logic P.C.B. VR507	Adjust VR507 to obtain 420 kHz $\pm 5\%$ on the frequency counter.
4	Tone Level Calibration	Test Tone 400 Hz	VTVM to MA4, MA5 (and MA6 (GND)) on Mother P.C.B. and Oscilloscope to Line Output Jacks	Monitor SW – Source Test Tone SW – 400 Hz	Oscillator P.C.B. VR303 VR302 VR301 L302	1. Remove the Oscillator P.C.B. Ass'y from the Mother P.C.B. Ass'y, then connect them with an Extension Card M-9060 (DA09060A). (Pull out the Head connectors CN-5 and CN-6 from the Oscillator P.C.B. Ass'y.) 2. Set the Oscillation Select switch on the Extension Card to 400 Hz (turn fully counterclockwise). 3. Adjust VR303 to obtain 90 mV ± 0.1 dB on the VTVM. 4. Set the Oscillation Select switch on the Extension Card to 7 kHz (center position). 5. Observing the test tone waveform on the oscilloscope, adjust L302 to obtain the minimum distortion. 6. Adjust VR302 to obtain 9 mV ± 0.1 dB on the VTVM. 7. Set the Oscillation Select switch on the Extension Card to 15 kHz (turn fully clockwise). 8. Adjust VR301 to obtain 9 mV ± 0.1 dB on the VTVM. 9. After completion of above adjustment, reverse the above 1.
5	Meter Offset Adjustment	400 Hz (+15 dB) to Line Input Jacks	None	Monitor SW – Source Test Tone SW – OFF	Indicator P.C.B. VR301	1. Ground the pin No. 3 of CN-10 (Reset signal) on the MIC & Meter Amp. P.C.B. Ass'y with a jumper wire (peak level indication will go out). 2. Feed in 400 Hz +15 dB, then increasing the input level by turning the Line Input level controls, observe the shifting of level meter indication from the 15th segment (0 dB segment) to the 16th segment (right hand segment). 3. Adjust VR301 so that the indication shift from the 15th segment (0 dB segment) to the 16th is carried out smoothly. a. The 16th and the 17th segments light up simultaneously. b. The 16th segment is skipped and the 17th segment lights up. 4. Remove the jumper wire from the pin No. 3 of CN-10.

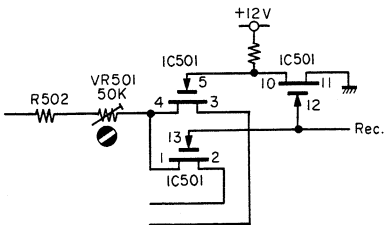


Fig. 6.1
1. Tape Speed

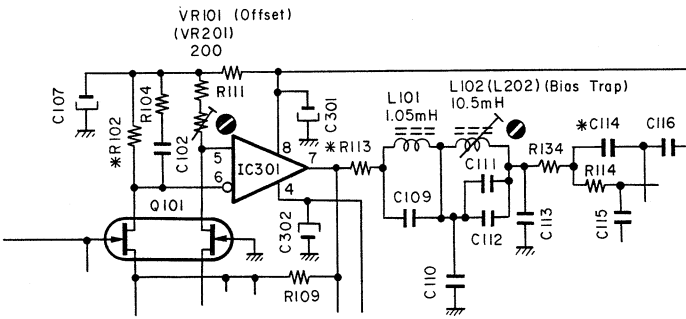


Fig. 6.2
2. Playback Amp. Offset

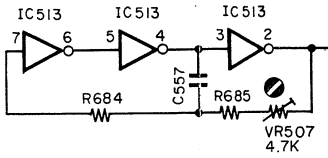


Fig. 6.3
3. CPU Clock Frequency

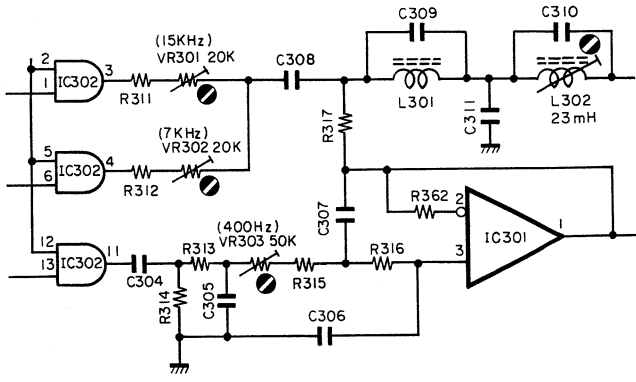
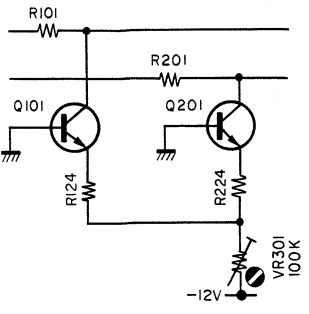


Fig. 6.4
4. Tone Level



STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
6	Meter Level Adjustment	400 Hz (0 dB) to Line Input Jacks	VTVM to MA4, MA5 (and MA6 (GND)) on Mother P.C.B.	Monitor SW — Source Test Tone SW — OFF	MIC & Meter Amp. P.C.B. VR101, VR201	1. Ground the pin No. 3 of CN-10 (Reset signal) on the MIC & Meter Amp. P.C.B. Ass'y with a jumper wire (peak level indication will go out). 2. Feed in 400 Hz, then adjust the Line Input level controls to obtain 90 mV on the VTVM. 3. Adjust VR101 (VR201) to obtain 0 dB on the level meter. 4. Check the accuracy of 0 dB setting as follows, since the 0 dB segment lights up over 0.9 dB level range: Decrease the external generator output level by 0.45 dB, and check if the 0 dB segment goes out. If it does, 0 dB setting is accurate as it will be set in the center of the level range. At the same time, check to insure that the 0 dB segments of L ch. and R ch. light up simultaneously. If satisfactory results are not obtained, repeat 3 and 4. 5. Remove the jumper wire from the pin No. 3 of CN-10.
7	MPX Filter Adjustment	19 kHz $\pm$ 100 Hz to Line Input Jacks	VTVM to Line Output Jacks	Monitor SW — Source Test Tone SW — OFF Filter SW — OFF/MPX Noise Reduction SW — OUT	Mother P.C.B. L102, L202	1. Set the Output level controls to max. 2. Adjust the Line Input level controls to obtain 1 V on the VTVM. 3. Set the Filter switch to MPX, then adjust L102 (L202) to obtain the minimum reading on the VTVM (the minimum reading will be less than -30 dB).
8	Playback Head Track Alignment	1 kHz Track Alignment Tape (DA09007A)	VTVM to Line Output Jacks	Playback Monitor SW — Tape Eq. SW — 70 μ s Noise Reduction SW — OUT Filter SW — OFF	PH Height Gear	1. Press the Manual Set button. 2. Adjust the PH Height Gear to obtain the minimum readings of both channels on the VTVM. 3. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 4.9.
9	Playback Head Azimuth Alignment	15 kHz Azimuth Tape (DA09004A)	VTVM to Line Output Jacks	Same as above	Playback Head Azimuth Alignment Screw	1. Press the Manual Set button. 2. Adjust the Playback Head Azimuth Alignment screw to obtain the maximum readings of both channels on the VTVM. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 4.9. 3. Repeat above steps 8 and 9 one or two times to obtain optimum performance.
10	Playback Level Adjustment	400 Hz Level Tape (DA09005A)	VTVM to MA1, MA2 on Mother P.C.B.	Same as above	Playback Amp. & Dolby NR P.C.B. VR102, VR202	1. Press the Manual Set button. 2. Adjust VR102 (VR202) to obtain 90 mV on the VTVM.
11	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 Line Output Jacks	Same as above		1. Press the Manual Set button. 2. Load a 400 Hz level tape and play it back. Set the Output level controls to a certain level (0 dB for example). 3. Load 10 kHz, 15 kHz and 20 kHz PB frequency response tapes, then adjust the playback head azimuth to obtain maximum levels on the VTVM with each tape. 4. Read the maximum levels with each tape and check to insure that the levels against the 400 Hz level tape are within the following ranges. 10 kHz: -20 dB -1 dB to +2 dB 15 kHz: -20 dB -1 dB to +2 dB 20 kHz: -20 dB -1 dB to +2 dB 5. Conduct step 9 "Playback Head Azimuth Alignment". 6. If above is not sufficient, refer to "Playback Frequency Response Adjustment in item 6.3.
12	Bias Oscillation Frequency Adjustment	None	Frequency Counter to TP1, TP2 (and TP3 (GND)) (or across R119, R219) on Oscillator P.C.B.	Record, Pause Monitor SW — Source Tape SW — ZX Eq. SW — 70 μ s Noise Reduction SW — OUT	Oscillator P.C.B. T301	1. Connect the connector CN-71 of the Test Unit to the test connector CN-71 on the Auto Cal. B P.C.B. Ass'y. 2. After setting the Mode switches, press the Tape Memory A button. 3. Press SW4 on the Test Unit to ON. 4. Press the Record and Pause buttons. 5. Adjust T301 to obtain 105 kHz $\pm$1 kHz on the frequency counter.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
16	Record Head Height Adjustment and Azimuth Alignment	Test Tone 400 Hz and 15 kHz (−20 dB) to Line Input Jacks	VTVM to Line Output Jacks	Record, Playback Monitor SW — Source/Tape Test Tone SW — 400 Hz/OFF Tape SW — SX Eq. SW — 70 μs Noise Reduction SW — OUT Filter SW — OFF	Head Height: RH Height Gear Azimuth Alignment: Record Head Azimuth Alignment Screw Main Logic P.C.B. VR508	1. In stop mode, turn the Azimuth Motor by hand so that the Alignment Indicator corresponds to the pointer of the Azimuth Alignment Motor Ass'y as shown in Fig. 4.23. Remove the Azimuth Alignment wire by pulling out from the Azimuth Alignment Motor Ass'y. (In this case, do not move the Slide Lever of the Azimuth Alignment wire.) 2. Load a reference ZX tape (DA09037A), then perform the auto calibration function as follows: a. Press the Record and Pause buttons. b. Pressing the Auto Calibration button "Run", press the Play button. Tape counter becomes "0000" and Auto Azimuth Alignment button light starts flashing. After disappearing flashing, Bias, Level and Eq. will go to performance automatically. The tape is rewound to "0000", the Standby/Set button light and the Manual Set button light come on, and the auto calibration function is completed. 3. During the azimuth alignment operation in 2, adjust VR508 on the Main Logic P.C.B. so that the Alignment Indicator corresponds to the pointer of the Azimuth Alignment Motor Ass'y as shown in Fig. 4.23. 4. Record Head Height Adjustment: a. Set the Test Tone switch to 400 Hz. Record signals on the reference ZX tape (DA09037A), and then play it back. b. Adjust the RH Height Gear to obtain the maximum readings of both channels on the VTVM. 5. Record Head Azimuth Alignment: a. Set the Test Tone switch to OFF, then feed in 15 kHz −20 dB. Record signals on the reference ZX tape (DA09037A) and then play it back. b. Adjust the Record Head Azimuth Alignment Screw to obtain the maximum readings of both channels on the VTVM. c. Repeat 4 and 5 one or two times to obtain optimum performance. 6. Press the Stop button, then perform the auto azimuth alignment function as follows: a. Press the Record and Pause buttons. b. Pressing the Auto Azimuth Alignment button "Azimuth", press the Play button. The counter becomes "0000" and Auto Azimuth Alignment button light starts flashing. When alignment is completed, the button light goes out and the tape is automatically rewound to "0000". 7. During the auto azimuth alignment operation in 6, check to insure whether the Alignment Indicator corresponds to the pointer of the Azimuth Alignment Motor Ass'y at the position of VR508 as adjusted in 3. If not, re-adjust VR508 to correspond the Alignment Indicator to the pointer of the Azimuth Alignment Motor Ass'y. 8. Press the Stop button, then mount the Azimuth Alignment wire on the Azimuth Alignment Motor Ass'y referring to Fig. 4.24. 9. Perform the auto calibration function referring to 2. During the auto azimuth alignment operation, check to insure that the Alignment Indicator corresponds to the pointer of the Azimuth Alignment Motor Ass'y. 10. Feed in 15 kHz −20 dB. Record signals on the reference ZX tape (DA09037A) and then play it back. Check to insure that the playback level is the same as the source monitor level for both channels.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
17	Record Level Calibration and Recording Bias Current Adjustment	400 Hz (−20 dB) and 15 kHz (−20 dB) to Line Input Jacks	VTVM to Line Output Jacks	Record, Playback Monitor SW — Source/Tape Test Tone SW — OFF Tape SW — ZX/SX/EX Eq. SW — 70 μ s (ZX/SX) 120 μ s (EX) Noise Reduction SW — OUT Filter SW — OFF	Record Eq. Amp. P.C.B. (Level) ZX: VR103, VR203 SX: VR102, VR202 EX: VR101, VR201 Oscillator P.C.B. (Bias Current) ZX: VR103, VR203 SX: VR102, VR202 EX: VR101, VR201	- Connect the connector CN-71 of the Test Unit to the test connector CN-71 on the Auto Cal. B P.C.B. Ass'y. - Adjustment for ZX tape: - After setting the Mode switches (Tape switch: ZX, Eq. switch: 70 μs), press the Tape Memory A button. - Press SW4 on the Test Unit to ON. - Load a reference ZX tape (DA09037A). Feed in 400 Hz −20 dB, then record and play it back. - Adjust VR103 (VR203) on the Record Eq. Amp. P.C.B. Ass'y to obtain the same readings with Monitor switch Source and Tape on the VTVM. - Feed in 15 kHz −20 dB, then record and play it back. - Adjust VR103 (VR203) on the Oscillator P.C.B. Ass'y to obtain 1 dB higher reading with Monitor switch Tape than the reading with Monitor switch Source on the VTVM. - Adjustment for SX tape: - After setting the Mode switches (Tape switch: SX, Eq. switch: 70 μs), press the Tape Memory A button. - Press SW4 on the Test Unit to ON. - Load a reference SX tape (DA09025A). Feed in 400 Hz −20 dB, then record and play it back. - Adjust VR102 (VR202) on the Record Eq. Amp. P.C.B. Ass'y to obtain the same readings with Monitor switch Source and Tape on the VTVM. - Feed in 15 kHz −20 dB, then record and play it back. - Adjust VR102 (VR202) on the Oscillator P.C.B. Ass'y to obtain 1 dB higher reading with Monitor switch Tape than the reading with Monitor switch Source on the VTVM. - Adjustment for EX tape: - After setting the Mode switches (Tape switch: EX, Eq. switch: 120 μs), press the Tape Memory A button. - Press SW4 on the Test Unit to ON. - Load a reference EX tape (DA09066A). Feed in 400 Hz −20 dB, then record and play it back. - Adjust VR101 (VR201) on the Record Eq. Amp. P.C.B. Ass'y to obtain 1 dB higher reading with Monitor switch Tape than the reading with Monitor switch Source on the VTVM. - Feed in 15 kHz −20 dB, then record and play it back. - Adjust VR101 (VR201) on the Oscillator P.C.B. Ass'y to obtain 2 dB higher reading with Monitor switch Tape than the reading with Monitor switch Source on the VTVM.

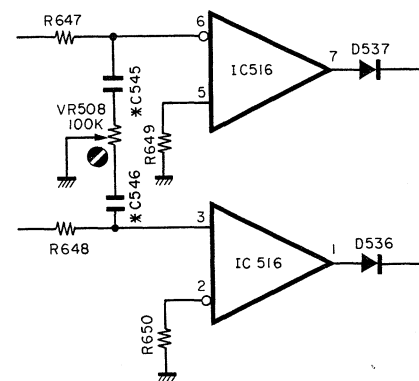


Fig. 6.12

16. Record Head Azimuth

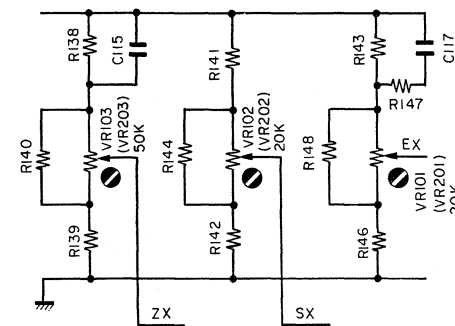
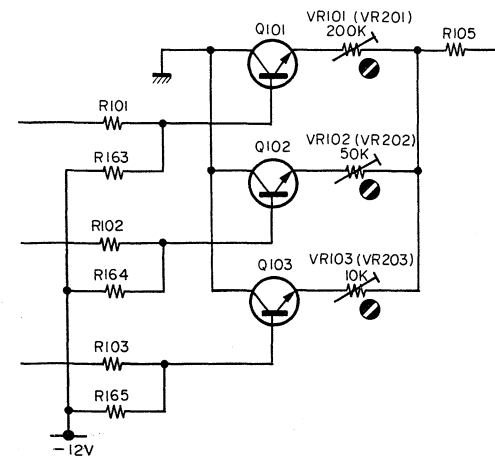


Fig. 6.13

17. Record Level and Recording Bias Current



STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
18	Bias Trap Adjustment (Playback)	None	VTVM to Line Output Jacks	Record, Playback Monitor SW — Tape Tape SW — ZX Eq. SW — 70 μ s Noise Reduction SW — OUT Filter SW — OFF	Playback Amp. & Dolby NR P.C.B. L102, L202	1. Remove the Playback Amp. & Dolby NR P.C.B. Ass'y from the Mother P.C.B. Ass'y, then connect them with an Extension Card M-9058 (DA-09058A). 2. Load a reference ZX tape (DA09037A), then perform the auto calibration function as follows: a. Press the Record and Pause buttons. b. Pressing the Auto Calibration button "Run", press the Play button. 3. Load a blank tape, then press the Record and Play buttons. 4. Adjust L102 (L202) to obtain the minimum reading on the VTVM. 5. After completion of above adjustment, reverse the above 1.
19	Overall Frequency Response Adjustment	400 Hz (0 dB) and 20 Hz — 20 kHz (—20 dB) to Line Input Jacks	VTVM and Distortion Meter to Line Output Jacks	Record, Playback Monitor SW — Source/Tape Test Tone SW — OFF Tape SW — EX/SX/ZX Eq. SW — 120 μ s (EX) 70 μ s (SX/ZX) Noise Reduction SW — OUT Filter SW — OFF	Record Eq. Amp. P.C.B. L101, L201	For each tape to be used, perform the auto calibration function referring to step 18-2. 1. Set the Monitor switch to Source. 2. Feed in 400 Hz 0 dB, then adjust the Line Input level controls to obtain 0 dB on the level meters. 3. Switch the generator output level to —20 dB. 4. Set the Monitor switch to Tape, then record and play it back. 5. Feed in 20 Hz — 20 kHz —20 dB, then check to insure that the output levels are within —20 dB $\pm$1.5 dB on the VTVM. 6. If above is not sufficient, adjust L101 (L201) to obtain —20 dB $\pm$1.5 dB output level on the VTVM. 7. If a satisfactory result is not obtained, precise re-adjustment of step 11 "Playback Frequency Response", replacement of Playback Head or Record Head, check on item 4.11 "Tape Travelling Adjustment", or frequency adjustment according to item 6.3 will be required.
20	Crosstalk Measurement	1 kHz to Line Input Jacks	1 kHz Band Pass Filter and VTVM to Line Output Jacks	Record and Playback Monitor SW — Source/Tape Test Tone SW — OFF Tape SW — ZX Eq. SW — 70 μ s Noise Reduction SW — OUT Filter SW — OFF		1. Erase a reference ZX tape (DA09037A) with a bulk eraser. 2. Load the tape, then perform the auto calibration function according to step 18-2. 3. Adjust the Line Input level controls to obtain 0 dB on the level meters, then record the signals on the tape. 4. Turn the cassette tape the other way round and play it back. 5. Measure the difference between 3 and 4.
21	Channel Separation Measurement	1 kHz to Line Input Jacks	Same as above	Same as above		1. Erase a reference ZX tape (DA09037A) with a bulk eraser. 2. Load the tape, then perform the auto calibration function according to step 18-2. 3. Adjust the L ch. (R ch.) Line Input level control to obtain 0 dB on the level meter, then close the R ch. (L ch.) Line Input level control. 4. Record and play it back, then measure the R ch. (L ch.) level.
22	Erasure Measurement	1 kHz to Line Input Jacks	Same as above	Same as above		1. Erase a reference ZX Tape (DA09037A) with a bulk eraser. 2. Load the tape, then perform the auto calibration function according to step 18-2. 3. Adjust the Line Input level controls to obtain 0 dB on the level meters, then record the signals on the tape. 4. Rewind the tape then close the Line Input level controls. 5. Record and play it back, then measure the difference between 3 and 4.
23	Signal to Noise Ratio Measurement	400 Hz to Line Input Jacks	VTVM and Distortion Meter to Line Output Jacks	Record and Playback Monitor SW — Tape Test Tone SW — OFF Tape SW — ZX Eq. SW — 70 μ s Noise Reduction SW — Dolby NR Filter SW — OFF		1. Load a reference ZX tape (DA09037A), then perform the auto calibration function according to step 18-2. 2. Feed in 400 Hz (0 dB), then record and play it back. 3. Adjust the Line Input level controls to obtain 3% total harmonic distortion in Playback mode. 4. Close the Line Input level controls then record again. 5. After rewound, 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.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
24	Total Harmonic Distortion Measurement	400 Hz to Line Input Jacks	Distortion Meter to Line Output Jacks	Record and Playback Monitor SW – Source/Tape Test Tone SW – OFF Tape SW – EX/SX/ZX Eq. SW – 120 μ s (EX) 70 μ s (SX/ZX) Noise Reduction SW – OUT Filter SW – OFF		1. Load a reference ZX tape (DA09037A), then perform the auto calibration function according to step 18-2. 2. Set the Monitor switch to Source, then adjust the Line Input level controls to obtain 0 dB on the level meters. 3. Set the Monitor switch to Tape, then 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.
25	Subsonic Filter Measurement	10 Hz $\pm$ 0.2 Hz to Line Input Jacks	VTVM to Line Output Jacks	Stop Monitor SW – Source Test Tone SW – OFF Eq. SW – 70 μ s Noise Reduction SW – OUT Filter SW – OFF/Subsonic		1. Set the Output level controls to max. 2. Adjust the Line Input level controls to obtain 1V on the VTVM. 3. Set the Filter switch to Subsonic, then check to insure that the readings of both channels are less than –55 dB on the VTVM.
26	Wow/Flutter Measurement	3 kHz Speed and Wow/Flutter Tape (DA09006A)	Wow/Flutter Meter to Line Output Jacks	Playback Monitor SW – Tape Test Tone SW – OFF Eq. SW – 70 μ s		1. Press the Manual Set button. 2. Play back and read the wow/flutter meter.

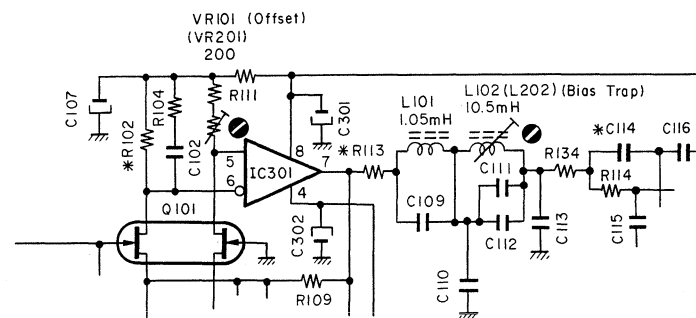


Fig. 6.14
18. Bias Trap (Playback)

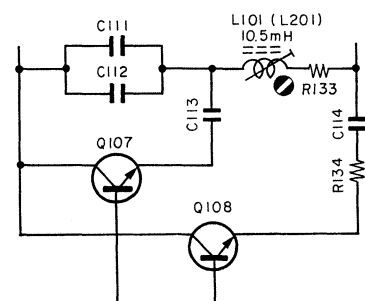


Fig. 6.15
19. Overall Frequency

6.3. Frequency Response Adjustment

(1) Playback Frequency Response Adjustment

Refer to Figs. 6.16 and 6.17.

(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 11 in 6.2 "Adjustment and Measurement Instructions".

Playback equalization level is varied by the modification of R121 (R221) and R122 (R222) for 70 μ s equalization and R110 (R210) for 120 μ s equalization on the Playback Amp. & Dolby NR P.C.B. Ass'y. Following are the details for level modifications:

For 70 μ s:

Approx. +1 dB R121 (R221): 2.3K
 R122 (R222): 3.51K
 0 dB R121 (R221): 2.67K
 R122 (R222): 3.16K
 Approx. -1 dB R121 (R221): 3K
 R122 (R222): 2.67K

For 120 μ s:

Approx. +1 dB R110 (R210): 16.2K
 0 dB R110 (R210): 18K
 Approx. -1 dB R110 (R210): 20.5K

(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 11 in 6.2 "Adjustment and Measurement Instructions".

Peaking portion compensates the gap loss of the playback head.

Peaking level is varied by the modification of R113 (R213) on the Playback Amp. & Dolby NR P.C.B. Ass'y as shown in Fig. 6.17. Typical value of R113 (R213) is 1 k Ω . The maximum and the minimum value of R113 (R213) should be 1.2 k Ω and 820 Ω .

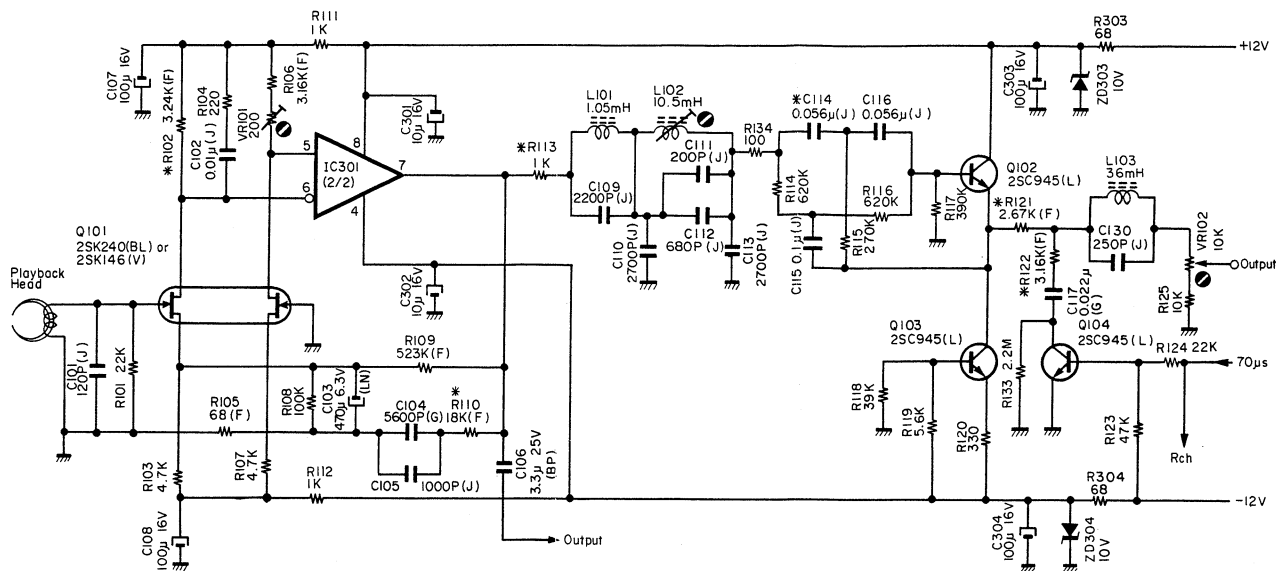


Fig. 6.16 Playback Amp.

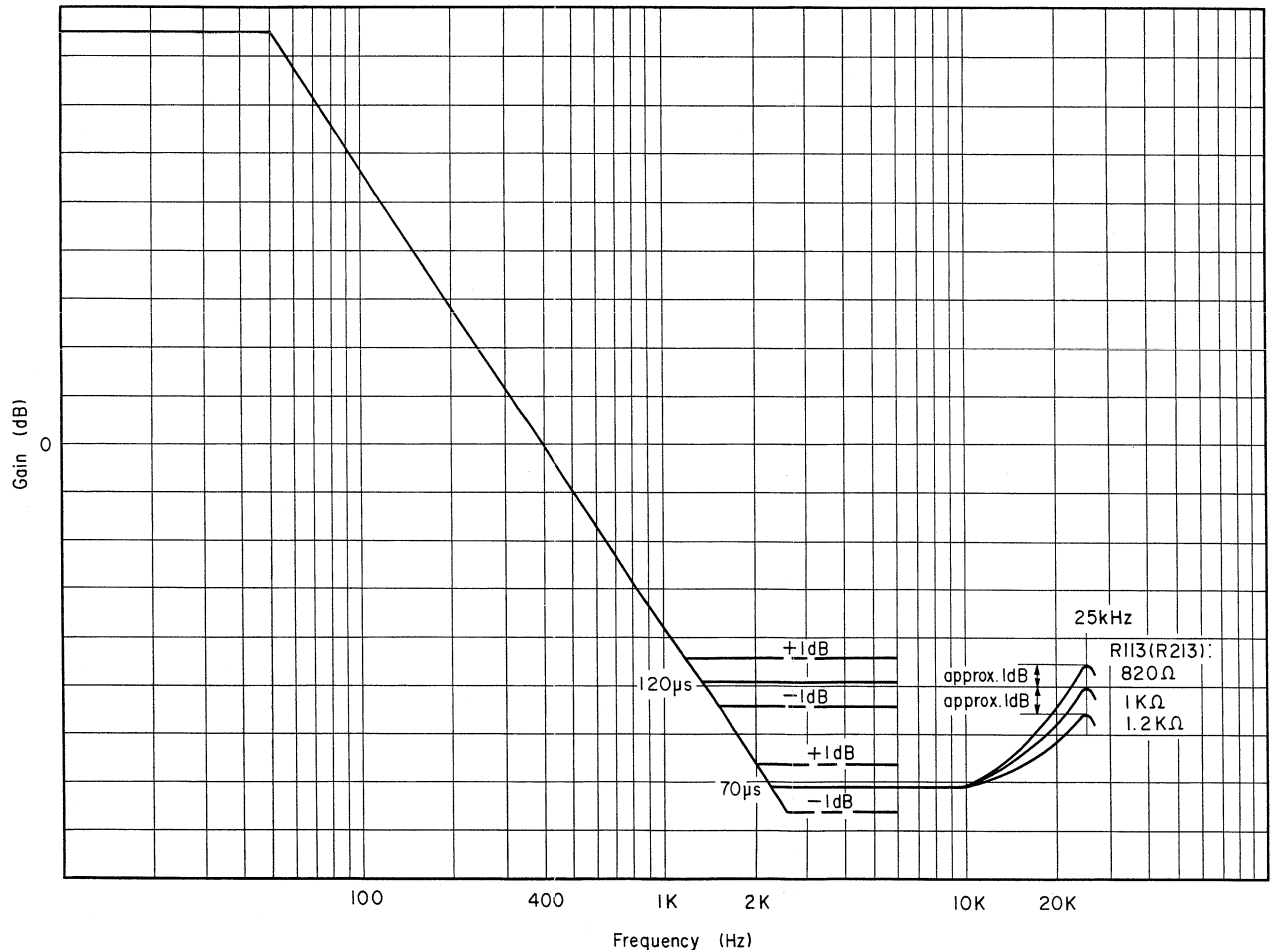


Fig. 6.17 Playback Equalization Curve

(2) Record Current Frequency Response

Record eq. peaking adjustment will be made to compensate the overall frequency response after the playback frequency response adjustment is completed. Before this adjustment, the following should be accurately adjusted.

- Tone level adjustment on step 4 in item 6.2
 Each oscillator level of the 400 Hz 0 dB, 7 kHz -20 dB and 15 kHz -20 dB should be accurate.
- Record head azimuth alignment on step 16 in item 6.2
 No misalignment is found when auto azimuth alignment function is completed.
- Tape travelling adjustment in item 4.11
 Tape travelling should be accurate.

Note: Cassette tape to be used for frequency response adjustment should satisfy the quality.

Fig. 6.18 shows the record peaking curve and Fig. 6.19 shows the record eq. peaking circuit. Peaking frequency is adjusted by the adjustment of L101 (L201).

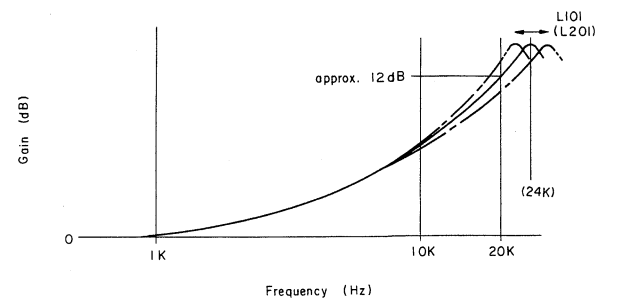


Fig. 6.18 Record Peaking Curve

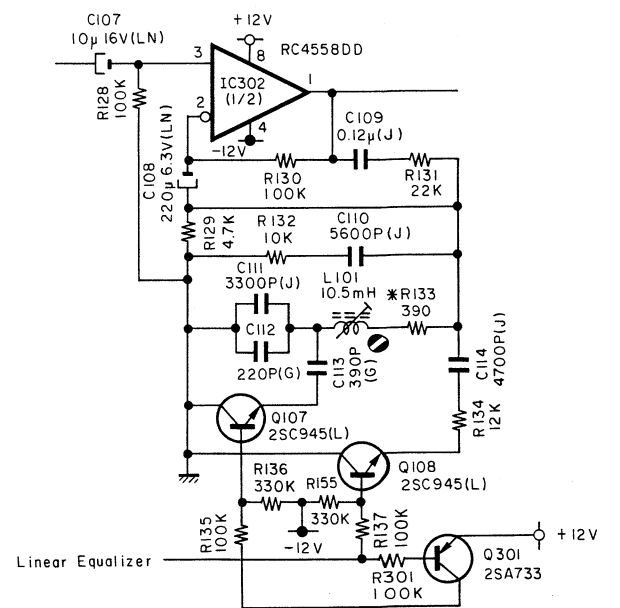


Fig. 6.19

6.4. Dolby NR Circuit Check

Dolby NR circuit incorporates a Dolby B-Type NR IC (μ A7300PC) which has no adjustment point.

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

(1) Playback Dolby NR Circuit

Signal Source: 5 kHz to pin No.12 of IC101 and IC201

Output Connection: VTVM to the test points MA4 and MA5 on the Mother P.C.B.

Mode: Stop
Monitor SW – Tape
Noise Reduction SW – Out/Dolby NR

- (a) Connect a VTVM to MA4 (MA5) on the Mother P.C.B.

Feed in 5 kHz to pin No. 12 of IC101 (IC201) and adjust the generator output control so that the VTVM may read 7.6 mV at each test point.

- (b) Set the Noise Reduction switch to Dolby NR. Check to insure that the level at MA4 (MA5) is 3 mV ± 1.5 dB.

(2) Record Dolby NR Circuit

Signal Source: 5 kHz to Line Input Jacks

Output Connection: VTVM to the output side of C121 (C221) on the Record Dolby NR P.C.B.

Mode: Stop
Monitor SW – Source

- (a) Connect a VTVM to MA4 (MA5) on the Mother P.C.B.

Feed in 5 kHz and adjust the Line Input level controls so that the VTVM may read 90 mV (0 dB) at each test point.

Level meter will indicate 0 dB.

- (b) Remove the VTVM from MA4 (MA5) and re-connect it to the output side of C121 (C221). Check to insure that the VTVM indicates approx. 560 mV.
- (c) Decrease the input level (0 dB) by 20 dB or 30 dB. Check to insure that the level at output side of C121 (C221) corresponds to the following with Noise Reduction switch Out (Dolby NR OUT) and Dolby NR (Dolby NR IN).

Input Level (f=5 kHz)	Capacitor Output Level		
	Dolby NR OUT	Dolby NR IN	Difference between IN and OUT
-20 dB	-20 dB	-16.8 dB ± 1.5 dB	3.2 dB ± 1.5 dB
-30 dB	-30 dB	-21.8 dB ± 1.5 dB	8.2 dB ± 1.5 dB

7. MOUNTING DIAGRAMS AND PARTS LIST

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

7.1. Pin Jack A P.C.B. Ass'y

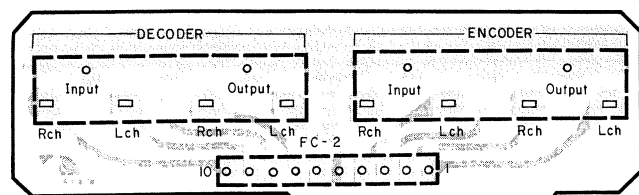
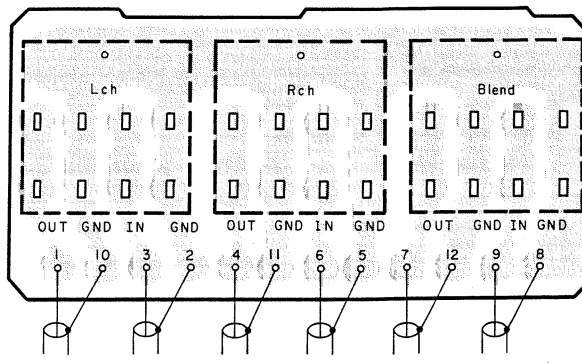


Fig. 7.1

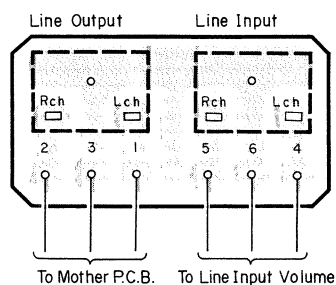
7.3. MIC Jack P.C.B. Ass'y



To MIC VR & SW P.C.B.

Fig. 7.3

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



To Mother P.C.B. To Line Input Volume

Fig. 7.2

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

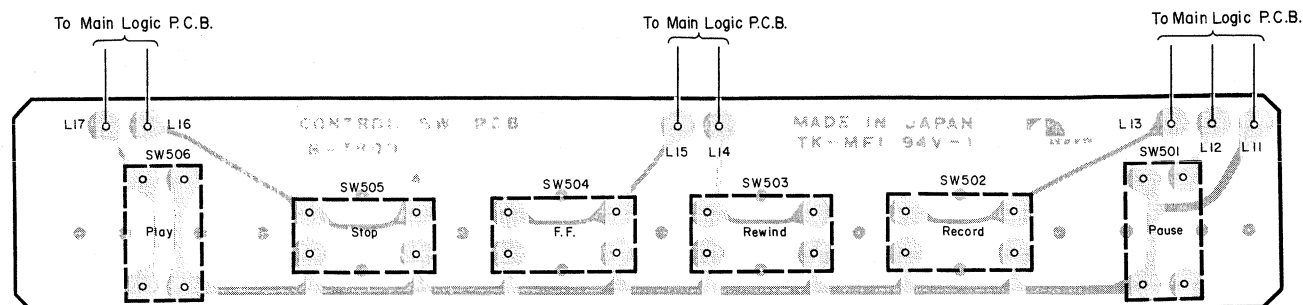


Fig. 7.4

7.5. Control Switch Lamp P.C.B. Ass'y

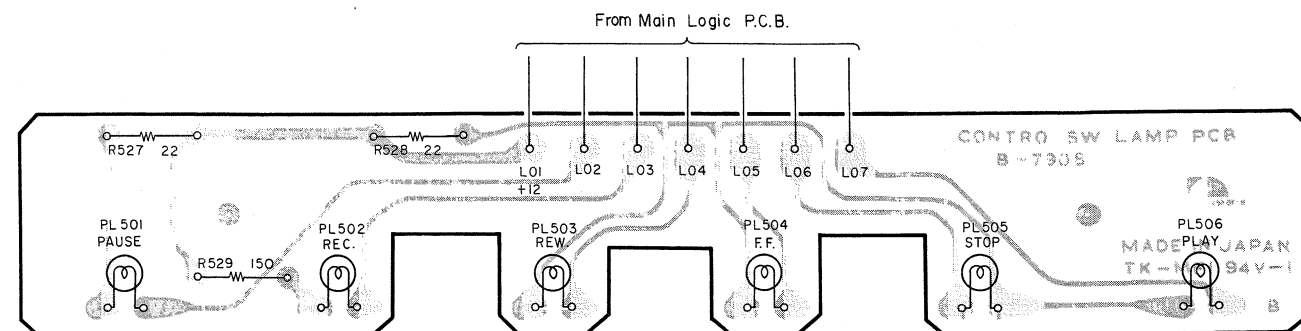


Fig. 7.5

7.6. Lamp A P.C.B. Ass'y

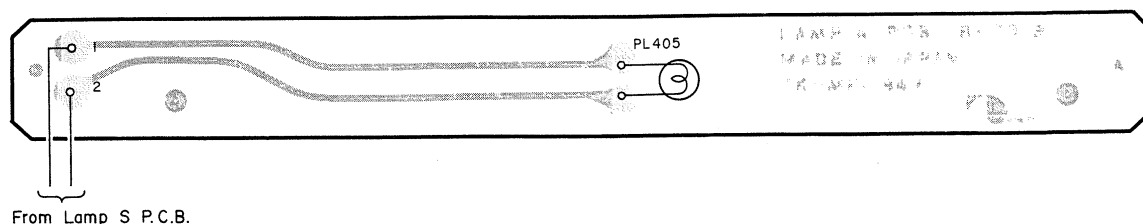


Fig. 7.6

7.7. Lamp B P.C.B. Ass'y

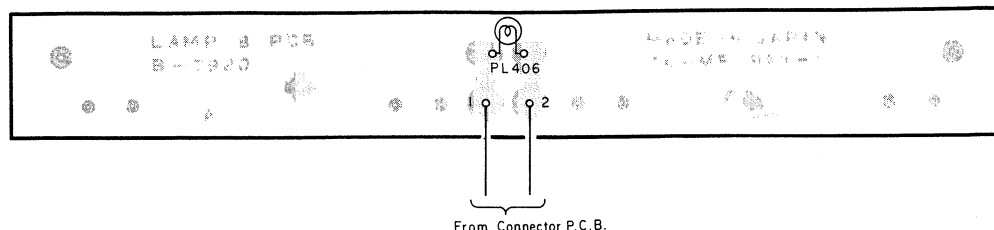


Fig. 7.7

7.8. Lamp S P.C.B. Ass'y

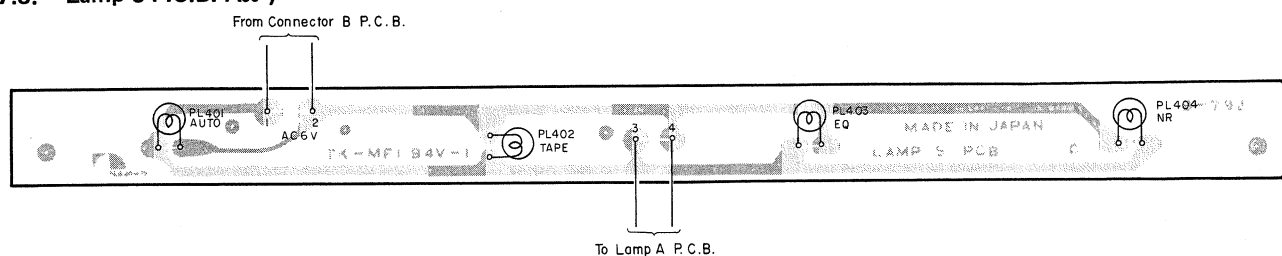


Fig. 7.8

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04298A	Pin Jack A P.C.B. Ass'y		BA04273A	Control Switch Lamp P.C.B. Ass'y
	0B07898A	Pin Jack A P.C.B.		0B07908B	Control Switch Lamp P.C.B.
	0B08813A	Mounting Pin Jack (2 pcs.)	R527,528	0B09049A	Fail Safe Type Resistor 22 RDF-25S J
			R529	0B05795A	Carbon Resistor 150 ERD-25T J
	BA04299A	Pin Jack B P.C.B. Ass'y	PL501-506	0B08851A	Lamp 12V 30mA
	0B07899A	Pin Jack B P.C.B.		0J04283B	Lamp Holder A (2 pcs.)
	0B08813A	Mounting Pin Jack (1 pce.)		BA04328A	Lamp A P.C.B. Ass'y
	BA04297A	MIC Jack P.C.B. Ass'y	PL405	0B07919A	Lamp A P.C.B.
	0B07897B	MIC Jack P.C.B.		0B08839A	Lamp 6.3V 70mA
	0B08725A	MIC Jack (3 pcs.)		BA04268A	Lamp B P.C.B. Ass'y
	BA04274A	Control Switch P.C.B. Ass'y	PL406	0B07920A	Lamp B P.C.B.
	0B07909A	Control Switch P.C.B.	CN78	0B08838A	Lamp 6.3V 100mA
	0B07219A	Switch AKC8S		0B08836A	2P-H Connector
SW501-506			PL401-404	BA04269A	Lamp S P.C.B. Ass'y
				0B07921C	Lamp S P.C.B.
				0B08838A	Lamp 6.3V 100mA

7.9. Switch Lamp A Ass'y

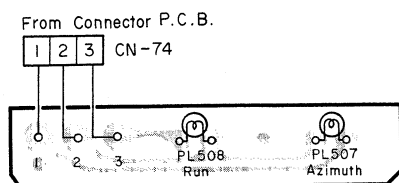


Fig. 7.9

7.10. Switch Lamp B Ass'y

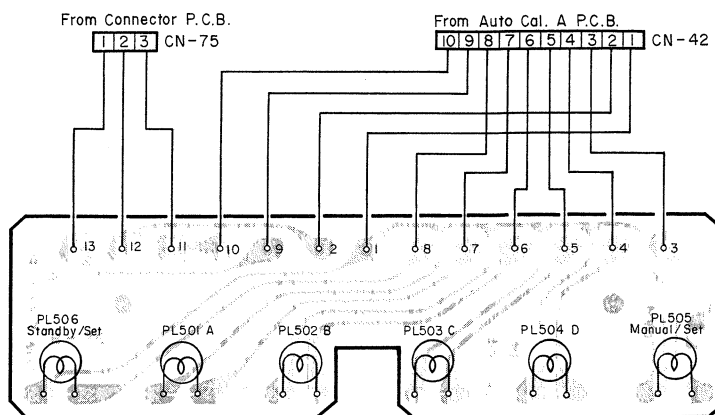


Fig. 7.10.1 2nd Version

7.11. Switch A P.C.B. Ass'y

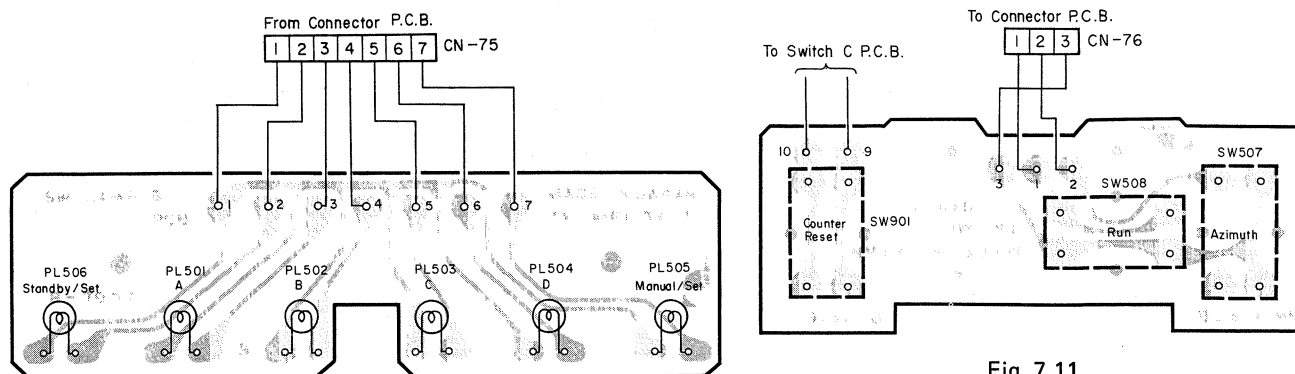


Fig. 7.10.2 1st Version

Fig. 7.11

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

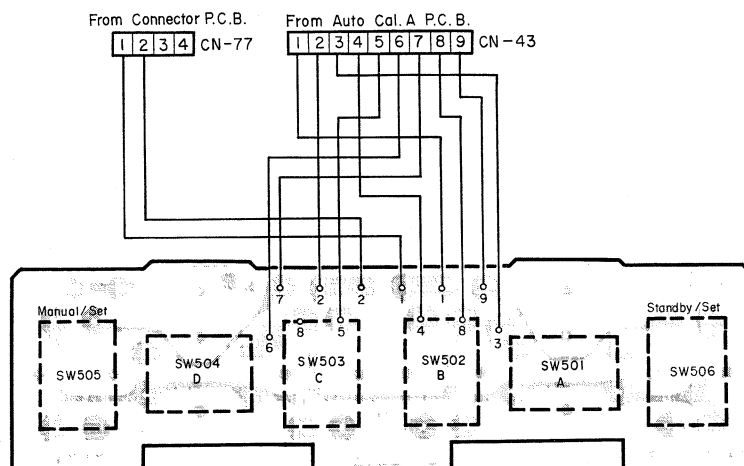


Fig. 7.12.1 2nd Version

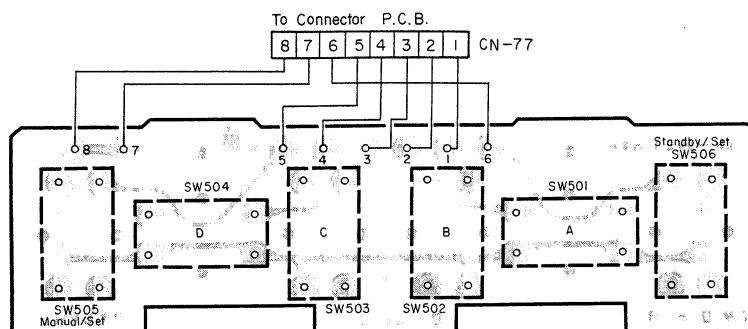


Fig. 7.12.2 1st Version

7.13. Connector P.C.B. Ass'y

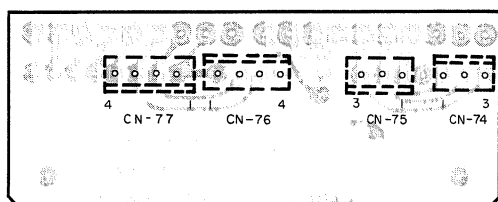


Fig. 7.13.1 2nd Version

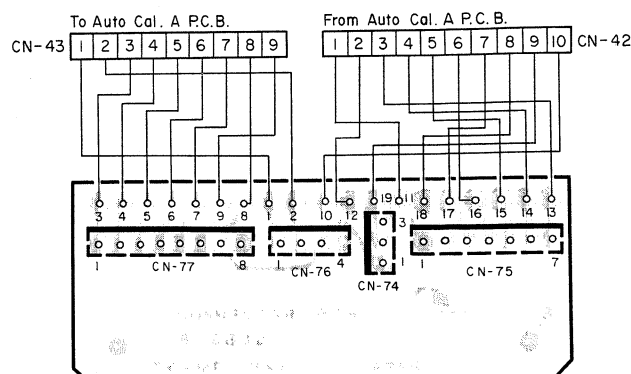


Fig. 7.13.2 1st Version

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
PL507,508 CN74	BA04271A	Switch Lamp A P.C.B. Ass'y	SW501-506 CN43 CN77	BA04326A	Switch B P.C.B. Ass'y 2nd Version
	OB07923A	Switch Lamp A P.C.B.		OB07917B	Switch B P.C.B.
	OB08851A	Lamp 12V 30mA		OB07219A	Switch AKC8S (6 pcs.)
	OB08784B	3P-H Connector		OB08798A	9P-H Connector
PL501-506 CN42 CN75	BA04272A	Switch Lamp B P.C.B. Ass'y 2nd Version	SW501-506 CN77	BA04326A	Switch B P.C.B. Ass'y 1st Version
	OB07907C	Switch Lamp B P.C.B.		OB07917A	Switch B P.C.B.
	OB08851A	Lamp 12V 30mA (6 pcs.)		OB07219A	Switch AKC8S
	OB08798A	10P-H Connector		OB08793B	8P-H Connector
PL501-506 CN75	BA04272A	Switch Lamp B P.C.B. Ass'y 1st Version	CN74,75 CN76,77	BA04301A	Connector P.C.B. Ass'y 2nd Version
	OB07907B	Switch Lamp B P.C.B.		OB07950C	Connector P.C.B.
	OB08851A	Lamp 12V 30mA (6 pcs.)		OB08653A	3P-T Post
	OB08833B	7P-H Connector		OB08654A	4P-T Post
SW507,508 901 CN76	BA04325A	Switch A P.C.B. Ass'y	CN42 CN43 CN74 CN75 CN76 CN77	BA04301A	Connector P.C.B. Ass'y 1st Version
	OB07916A	Switch A P.C.B.		OB07950B	Connector P.C.B.
	OB07219A	Switch AKC8S		OB08798A	10P Connector
	OB08834B	4P-H Connector		OB08799B	9P-H Connector

7.14. Connector B P.C.B. Ass'y

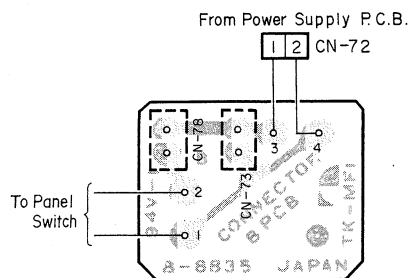


Fig. 7.14

7.15. Speed Cal. P.C.B. Ass'y

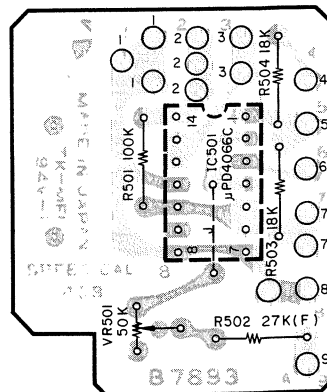


Fig. 7.15

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

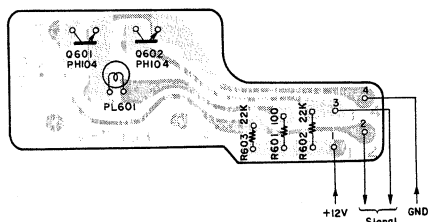


Fig. 7.16

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

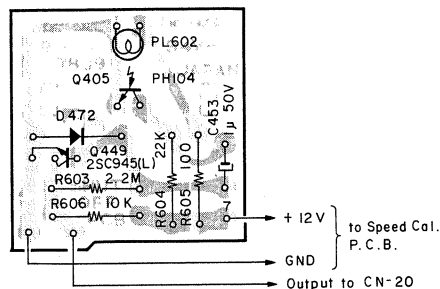


Fig. 7.17

Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
CN72 CN73,78	BA04310A	Connector B P.C.B. Ass'y	Q449 Q450 D472 R603 R604 R605 R606 C453 PL602	BA04070A	Shut-off P.C.B. Ass'y
	OB07951B	Connector B P.C.B.		OB07839A	Shut-off P.C.B.
	OB08820B	2P-H Connector		OB01872A	Transistor 2SC945 (L)
IC501 VR501 R501 R502 R503,504 CN17	BA04308A	Speed Cal. P.C.B. Ass'y		OB06228A	Photo Transistor PH104
	OB07893A	Speed Cal. P.C.B.		OB06181A	Silicon Diode 1SS53
	OB06144A	IC μPD4066C		OB05671A	Carbon Resistor 2.2M ERD-25T J
	OB07269A	Semi-fixed Volume 50K		OB05615A	Carbon Resistor 22K ERD-25T J
	OB01889A	Carbon Resistor 100K ERD-25T J		OB09215A	Fail Safe Type Resistor 100 RDF-25S J
	OB09444A	Metal Film Resistor 27K SN14K2E F		OB01888A	Carbon Resistor 10K ERD-25T J
	OB05560A	Carbon Resistor 18K ERD-25T J		OB01405A	Electrolytic Capacitor 1μ 50V
Q601,602 R601 R602,603 PL601	BA04237B	Counter Pulse Generator P.C.B. Ass'y		OB08552A	Lamp 12V 25mA
	OB07933A	Counter Pulse Generator P.C.B.	IC301 R101,104 201,204 R102,202 R103,203 R105,205 C101,201 C102,202 301 CN16	BA04266A	Line Amp. P.C.B. Ass'y
	OB06228A	Photo Transistor PH104		OB07906A	Line Amp. P.C.B.
	OB09215A	Fail Safe Type Resistor 100 REF-25S J		OB06146A	IC RC4558DD
	OB05661A	Carbon Resistor 22K ERD-25V J		OB01889A	Carbon Resistor 100K ERD-25T J
	OB08552A	Lamp 12V 25mA		OB01857A	Carbon Resistor 1K ERD-25T J
	OC08281B	P.C.B. Holder (1 pce.)		OB09550A	Metal Film Resistor 887 SN14K2E F
	OE00792A	BT Screw M2.6x6 Philips Pan Head (2 pcs.)		OB09203A	Metal Film Resistor 10K SN14K2E F
				OB01405A	Electrolytic Capacitor 1μ 50V
				OB01674A	Electrolytic Capacitor 10μ 25V
				OB08815B	5P Connector
				OB07346A	Rotary Switch (1 pce.)

7.18. Line Amp. P.C.B. Ass'y

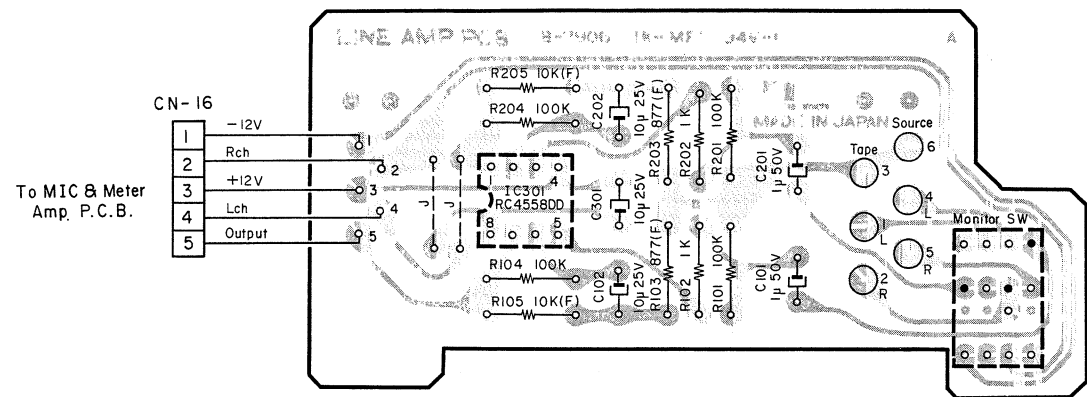


Fig. 7.18

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

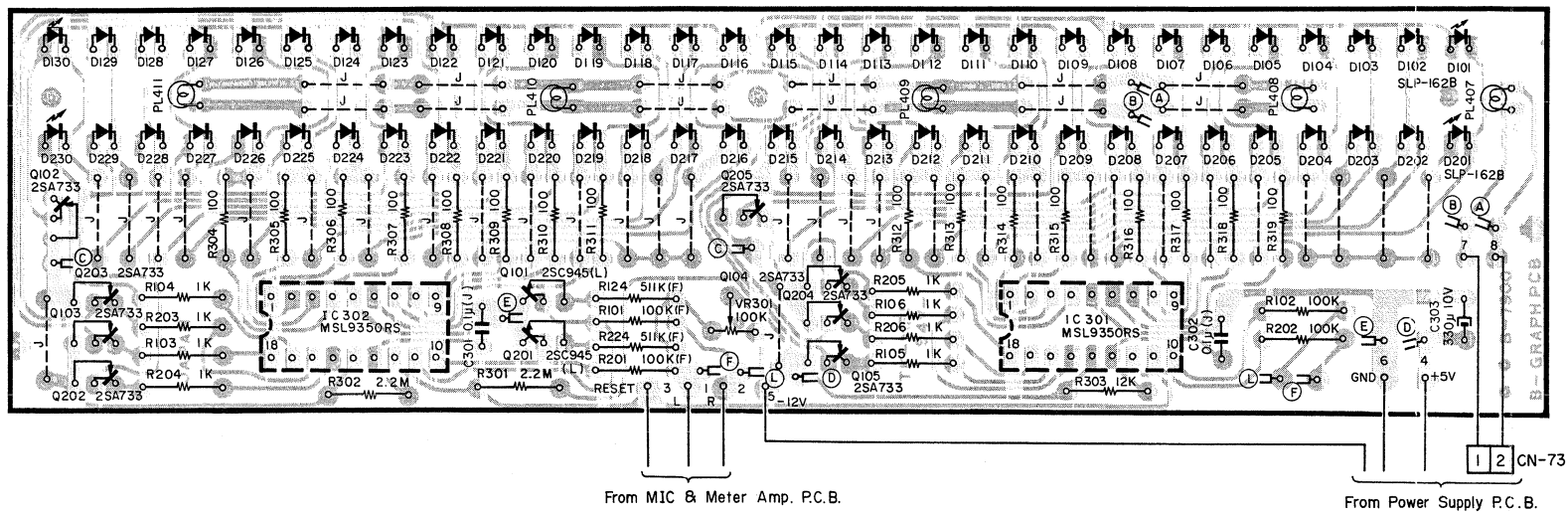


Fig. 7.19

Note: Diode is 1SS53 unless otherwise specified.

7.20. MIC Volume & Switch P.C.B. Ass'y

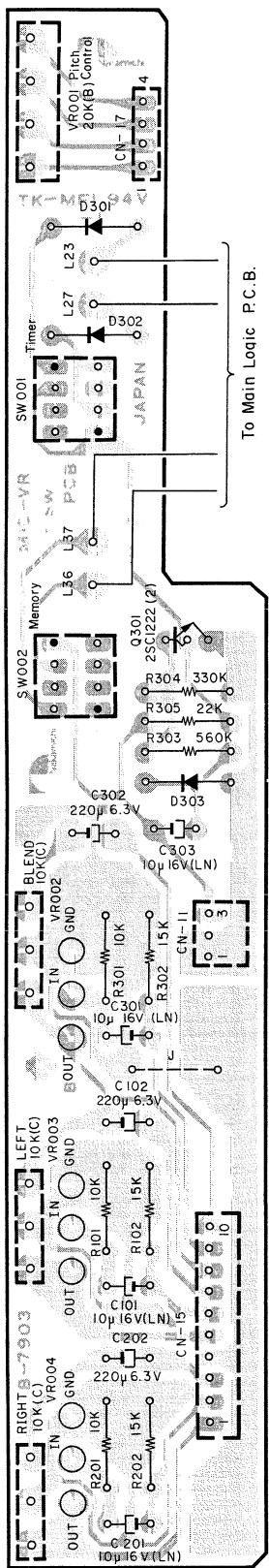


Fig. 7.20

Schematic Ref. No.	Part No.	Description
BA04300A Indicator P.C.B. Ass'y		
IC301,302	OB07900A	Indicator P.C.B.
Q101,201	OB06284A	IC MSL9350RS
Q102,105	OB01872A	Transistor 2SC945 (L)
202-205	OB06013A	Transistor 2SA733 (8 pcs.)
D101-130	OB06292A	LED SLP-162B (60 pcs.)
201-230		
VR301	OB07257A	Semi-fixed Volume 100K
R101,201	OB09305A	Metal Film Resistor 100K SN14K2E F
R102,202	OB01889A	Carbon Resistor 100K ERD-25T J
R103-106	OB01857A	Carbon Resistor 1K ERD-25T J (8 pcs.)
203-206		
R124,224	OB09299A	Metal Film Resistor 511K SN14K2E F
R301	OB05671A	Carbon Resistor 2.2M ERD-25T J
R302,303	OB09263A	Carbon Resistor 12K ERD-25T J
R304-319	OB01679A	Carbon Resistor 100 ERD-25T J (16 pcs.)
C301,302	OB01780A	Mylar Capacitor 0.1μ 50V J
C303	OB05841A	Electrolytic Capacitor 330μ 10V
PL407	OB08852A	Lamp 6.3V 50mA
PL408,409	OB08838A	Lamp 6.3V 100mA
410,411		
CN1	OB08791B	3P-H Connector
CN10	OB08819A	Indicator Connector
CN73	OB08874A	2P-H Connector
BA04293A MIC Volume & Switch P.C.B. Ass'y		
— MIC Volume —		
VR002,003	OB07344A	MIC Volume 10K (C)
004		
R101,201	OB01888A	Carbon Resistor 10K ERD-25T J
301		
R102,202	OB01683A	Carbon Resistor 15K ERD-25T J
302		
C101,201	OB09148A	Electrolytic Capacitor 10μ 16V (LN)
301		
C102,202	OB09151A	Electrolytic Capacitor 220μ 6.3V (LN)
302		
— Mechanism Control —		
Q301	OB06062A	Transistor 2SC1222 (2)
D301,302	OB06181A	Silicon Diode 1SS53
303		
VR001	OB07345A	Pitch Control Volume 20K (B)
R303	OB05784A	Carbon Resistor 560K ERD-25T J
R304	OB05627A	Carbon Resistor 330K ERD-25T J
R305	OB05615A	Carbon Resistor 22K ERD-25T J
C303	OB09148A	Electrolytic Capacitor 10μ 16V (LN)
SW001,002	OB07350A	Rotary Switch 2-3
— Miscellaneous —		
CN11	OB07903B	MIC Volume & Switch P.C.B.
CN15	OB08812A	3P-S Connector
CN17	OB08731A	10P-S Connector
	OB08804A	4P-T Post

7.21. MIC & Meter Amp. P.C.B. Ass'y

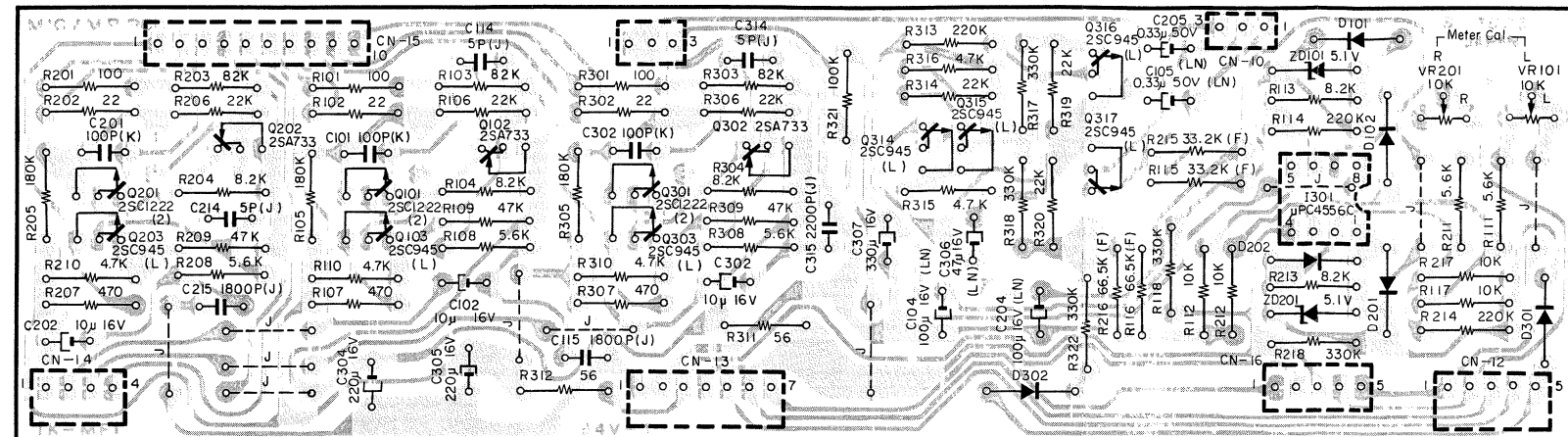


Fig. 7.21.1 2nd Version

Note: Diode is 1SS53 unless otherwise specified.

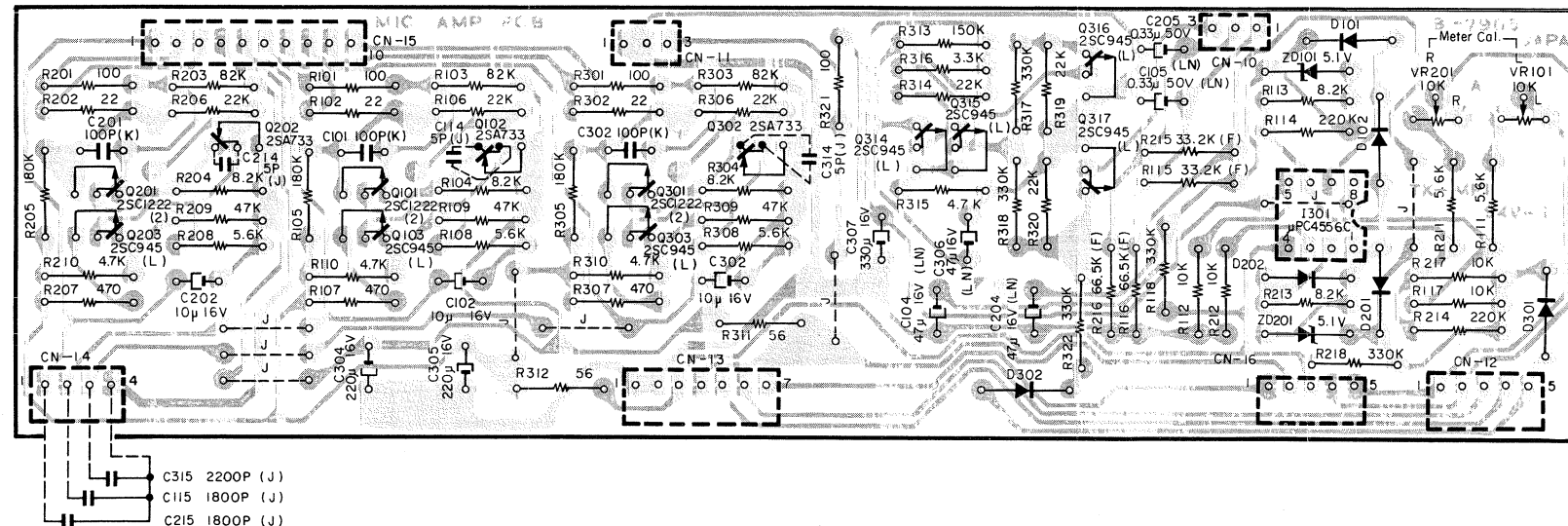


Fig. 7.21.2 1st Version

Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description
	BA04289A	MIC & Meter Amp. P.C.B. Ass'y 2nd Version
	— MIC Amp. —	
Q101,201 301	0B06062A	Transistor 2SC1222 (2)
Q102,202 302	0B06013A	Transistor 2SA733
Q103,203 303	0B01872A	Transistor 2SC945 (L)
R101,201 301	0B01679A	Carbon Resistor 100 ERD-25T J
R102,202 302	0B05579A	Carbon Resistor 22 ERD-25T J
R103,203 303	0B05668A	Carbon Resistor 82K ERD-25T J
R104,204 304	0B01856A	Carbon Resistor 8.2K ERD-25T J
R105,205 305	0B05640A	Carbon Resistor 180K ERD-25T J
R106,206 306	0B05615A	Carbon Resistor 22K ERD-25T J
R107,207 307	0B05576A	Carbon Resistor 470 ERD-25T J
R108,208 308	0B01887A	Carbon Resistor 5.6K ERD-25T J
R109,209 309	0B05641A	Carbon Resistor 47K ERD-25T J
R110,210 310	0B01846A	Carbon Resistor 4.7K ERD-25T J
R311,312	0B09508A	Fail Safe Type Resistor 56 RDF-25S J
C101,201 301	0B09282A	Ceramic Capacitor 100P 50V K
C102,202 302	0B01412A	Electrolytic Capacitor 10μ 16V
C114,214 314	0B09276A	Ceramic Capacitor 5P 50V J
C115,215	0B01913A	Mylar Capacitor 1800P 50V J
C304,305	0B01398A	Electrolytic Capacitor 220μ 16V
C315	0B01802A	Mylar Capacitor 2200P 50V J
	— Meter Reset —	
Q314,315 316,317	0B01872A	Transistor 2SC945 (L)
D302	0B06181A	Silicon Diode 1SS53
R313	0B05625A	Carbon Resistor 220K ERD-25T J
R314,319 320	0B05615A	Carbon Resistor 22K ERD-25T J
R315,316	0B01846A	Carbon Resistor 4.7K ERD-25T J
R317,318 322	0B05627A	Carbon Resistor 330K ERD-25T J
C306	0B09218A	Electrolytic Capacitor 47μ 16V (LN)
	— Meter Amp. —	
IC301	0B06216A	IC μPC4556C
ZD101,201	0B06058A	Zener Diode 5.1V YZ051
D101,102 201,202 301	0B06181A	Silicon Diode 1SS53
VR101,201	0B07162A	Semi-fixed Volume 10K

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
R111,211 R112,117 212,217 R113,213 R114,214 R115,215 R116,216 R118,218 R321 C104,204 C105,205 C307	OB01887A OB01888A OB01856A OB05625A OB09446A OB09510A OB05627A OB01679A OB09549A OB09327A OB01502A	Carbon Resistor 5.6K ERD-25T J Carbon Resistor 10K ERD-25T J Carbon Resistor 8.2K ERD-25T J Carbon Resistor 220K ERD-25T J Metal Film Resistor 33.2K SN14K2E F Metal Film Resistor 66.5K SN14K2E F Carbon Resistor 330K ERD-25T J Carbon Resistor 100 ERD-25T J Electrolytic Capacitor 100μ 16V (LN) Electrolytic Capacitor 0.33μ 50V (LN) Electrolytic Capacitor 330μ 16V		BA04289A	MIC & Meter Amp. P.C.B. Ass'y 1st Version	VR101,201 R111,211 R112,117 212,217 R113,213 R114,214 R115,215 R116,216 R118,218 R321 C104,204 C105,205 C307	OB07162A OB01887A OB01888A OB01856A OB05625A OB09446A OB09510A OB05627A OB01679A OB09218A OB09327A OB01502A	Semi-fixed Volume 10K Carbon Resistor 5.6K ERD-25T J Carbon Resistor 10K ERD-25T J Carbon Resistor 8.2K ERD-25T J Carbon Resistor 220K ERD-25T J Metal Film Resistor 33.2K SN14K2E F Metal Film Resistor 66.5K SN14K2E F Carbon Resistor 330K ERD-25T J Carbon Resistor 100 ERD-25T J Electrolytic Capacitor 47μ 16V (LN) Electrolytic Capacitor 0.33μ 50V (LN) Electrolytic Capacitor 330μ 16V
	— Miscellaneous —			— MIC Amp. —			— Miscellaneous —	
CN10 CN11 CN12 CN13 CN14 CN15 CN16	OB07905B OB08184A OB08185A OB08727A OB08729A OB08801A OB08615A OB08303A	MIC & Meter Amp. P.C.B. 3P-S Post 3P-T Post 5P-S Connector 7P-S Connector 4P-S Connector 10-T Post 5P-S Post	Q101,201 301 Q102,202 302 Q103,203 303 R101,201 301 R102,202 302 R103,203 303 R104,204 304 R105,205 305 R106,206 306 R107,207 307 R108,208 308 R109,209 309 R110,210 310 R311,312 C101,201 301 C102,202 302 C114,214 314 C115,215 C304,305 C315	OB06062A OB06013A OB01872A OB01679A OB05579A OB05668A OB01856A OB05640A OB05615A OB05576A OB01887A OB05641A OB01846A OB09508A OB09282A OB01412A OB09276A OB01913A OB01398A OB01802A	Transistor 2SC1222 (2) Transistor 2SA733 Transistor 2SC945 (L) Carbon Resistor 100 ERD-25T J Carbon Resistor 22 ERD-25T J Carbon Resistor 82K ERD-25T J Carbon Resistor 8.2K ERD-25T J Carbon Resistor 180K ERD-25T J Carbon Resistor 22K ERD-25T J Carbon Resistor 470 ERD-25T J Carbon Resistor 5.6K ERD-25T J Carbon Resistor 47K ERD-25T J Carbon Resistor 4.7K ERD-25T J Fail Safe Type Resistor 56 RDF-25S J Ceramic Capacitor 100P 50V K Electrolytic Capacitor 10μ 16V Ceramic Capacitor 5P 50V J Mylar Capacitor 1800P 50V J Electrolytic Capacitor 220μ 16V Mylar Capacitor 2200P 50V J	CN10 CN11 CN12 CN13 CN14 CN15 CN16	OB07905A OB08184A OB08185A OB08727A OB08729A OB08801A OB08615A OB08303A	MIC & Meter Amp. P.C.B. 3P-S Post 3P-T Post 5P-S Connector 7P-S Connector 4P-S Connector 10-T Post 5P-S Post
				— Meter Reset —				
			Q314,315 316,317 D302 R313 R314,319 320 R315 R316 R317,318 322 C306	OB01872A OB06181A OB05626A OB05615A OB01846A OB01681A OB05627A OB09218A	Transistor 2SC945 (L) Silicon Diode 1SS53 Carbon Resistor 150K ERD-25T J Carbon Resistor 22K ERD-25T J Carbon Resistor 4.7K ERD-25T J Carbon Resistor 3.3K ERD-25T J Carbon Resistor 330K ERD-25T J Electrolytic Capacitor 47μ 16V (LN)			
				— Meter Amp. —				
			IC301 ZD101,201 D101,102 201,202 301	OB06216A OB06058A OB06181A	IC μPC4556C Zener Diode 5.1V YZ051 Silicon Diode 1SS53			

7.22. Record Eq. Amp. P.C.B. Ass'y

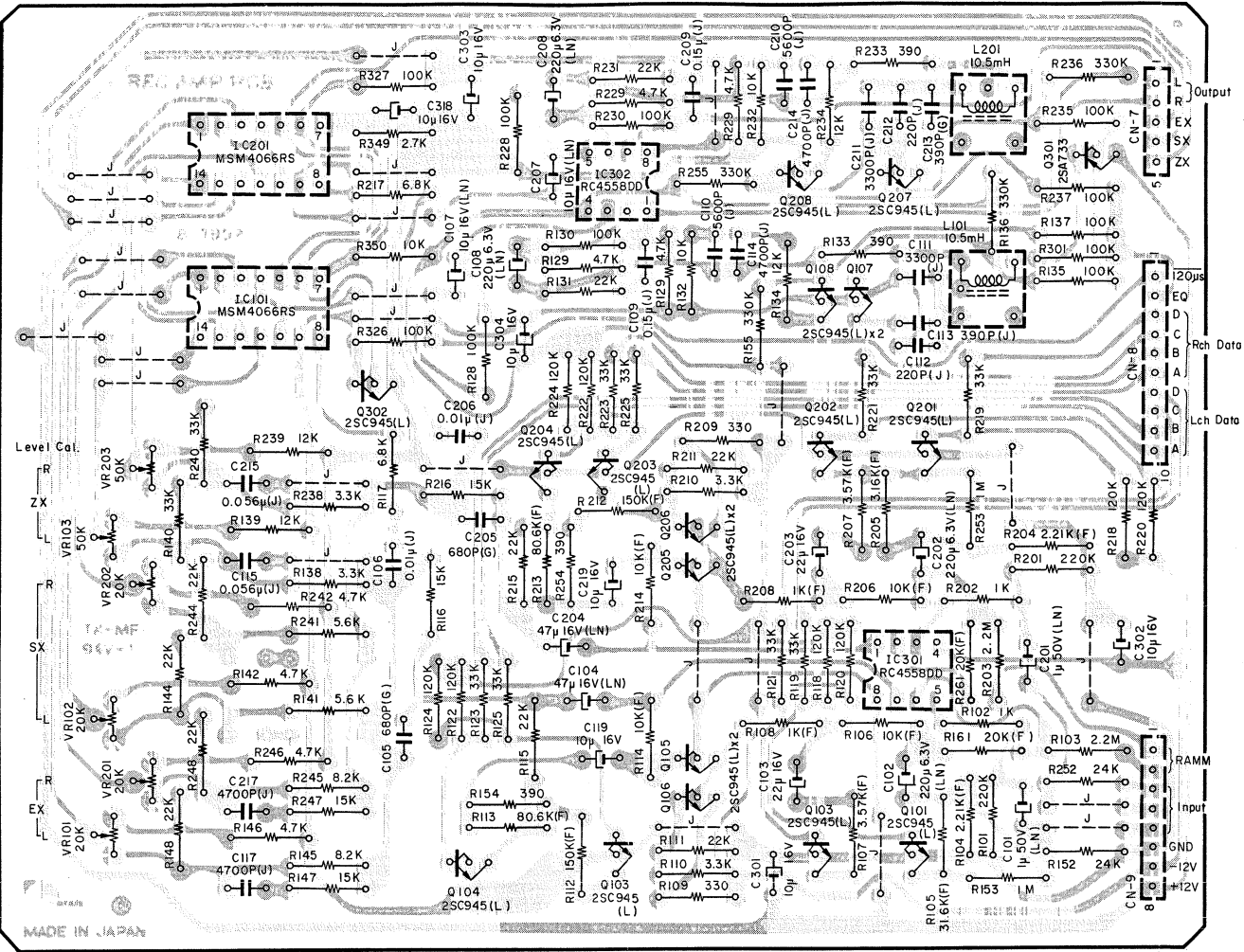


Fig. 7.22.1 2nd Version

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04296A	Record Eq. Amp. P.C.B. Ass'y 2nd Version	R152,252	OB09548A	Carbon Resistor 24K ERD-25T J
			R153,253	OB05776A	Carbon Resistor 1M ERD-25T J
			R161,261	OB09439A	Metal Film Resistor 20K SN14K2E F
			R349	OB05629A	Carbon Resistor 2.7K ERD-25T J
IC101,201	OB07902B	Record Eq. Amp. P.C.B.	C101,201	OB09223A	Electrolytic Capacitor 1μ 50V (LN)
IC301,302	OB06280A	IC MSM4066RS	C102,108	OB09151A	Electrolytic Capacitor 220μ 6.3V (LN)
Q101-108	OB06146A	IC RC4558DD			
201-208	OB01872A	Transistor 2SC945 (L) (17 pcs.)	202,208		
302			C103,203	OB01862A	Electrolytic Capacitor 22μ 16V
Q301	OB06013A	Transistor 2SA733	C104,204	OB09218A	Electrolytic Capacitor 47μ 16V (LN)
L101,201	OB00068A	Trap Coil 10.5mH	C105,205	OB09485A	PP Capacitor 680P 100V G
VR101,102	OB07215A	Semi-fixed Volume 20K	C106,206	OB05681A	Mylar Capacitor 0.01μ 50V J
201,202			C107,207	OB09148A	Electrolytic Capacitor 10μ 16V (LN)
VR103,203	OB07058A	Semi-fixed Volume 50K	C109,209	OB09171A	Mylar Capacitor 0.15μ 50V J
R101,201	OB05625A	Carbon Resistor 220K ERD-25T J	C110,210	OB05659A	Mylar Capacitor 5600P 50V J
R102,202	OB01857A	Carbon Resistor 1K ERD-25T J	C111,211	OB01914A	Mylar Capacitor 3300P 50V J
R103,203	OB05671A	Carbon Resistor 2.2M ERD-25T J	C112,212	OB09247A	Mica Capacitor 220P 50V J
R104,204	OB09547A	Metal Film Resistor 2.21K SN14K2E F	C113,213	OB09511A	PP Capacitor 390P 100V G
R105,205	OB09422A	Metal Film Resistor 3.16K SN14K2E F	C114,117	OB05652A	Mylar Capacitor 4700P 50V J
R106,114	OB09203A	Metal Film Resistor 10K SN14K2E F	214,217		
206,214			C115,215	OB05813A	Mylar Capacitor 0.056μ 50V J
R107,207	OB09507A	Metal Film Resistor 3.57K SN14K2E F	C119,219	OB01412A	Electrolytic Capacitor 10μ 16V
R108,208	OB09491A	Metal Film Resistor 1K SN14K2E F	301,302		
R109,209	OB05577A	Carbon Resistor 330 ERD-25T J	303,304		
R110,138	OB01681A	Carbon Resistor 3.3K ERD-25T J	318		
210,238			CN7	OB08727A	5P-S Connector
R111,115	OB05615A	Carbon Resistor 22K ERD-25T J	CN8	OB08731A	10P-S Connector
131,144			CN9	OB08730A	8P-S Connector
148,211					
215,231					
244,248					
R112,212	OB09300A	Metal Film Resistor 150K SN14K2E F			
R113,213	OB09459A	Metal Film Resistor 80.6K SN14K2E F			
R116,147	OB01683A	Carbon Resistor 15K ERD-25T J			
216,247					
R117,217	OB01682A	Carbon Resistor 6.8K ERD-25T J			
R118,120	OB05621A	Carbon Resistor 120K ERD-25T J			
122,124					
218,220					
222,224					
R119,121	OB05509A	Carbon Resistor 33K ERD-25T J			
123,125					
140,219					
221,223					
225,240					
R128,130	OB01889A	Carbon Resistor 100K ERD-25T J			
135,137					
228,230					
235,237					
301,326					
327					
R129,142	OB01846A	Carbon Resistor 4.7K ERD-25T J			
146,229					
242,246					
R132,232	OB01888A	Carbon Resistor 10K ERD-25T J			
350					
R133,154	OB05691A	Carbon Resistor 390 ERD-25T J			
233,254					
R134,139	OB09263A	Carbon Resistor 12K ERD-25T J			
234,239					
R136,155	OB05627A	Carbon Resistor 330K ERD-25T J			
236,255					
R141,241	OB01887A	Carbon Resistor 5.6K ERD-25T J			
R145,245	OB01856A	Carbon Resistor 8.2K ERD-25T J			

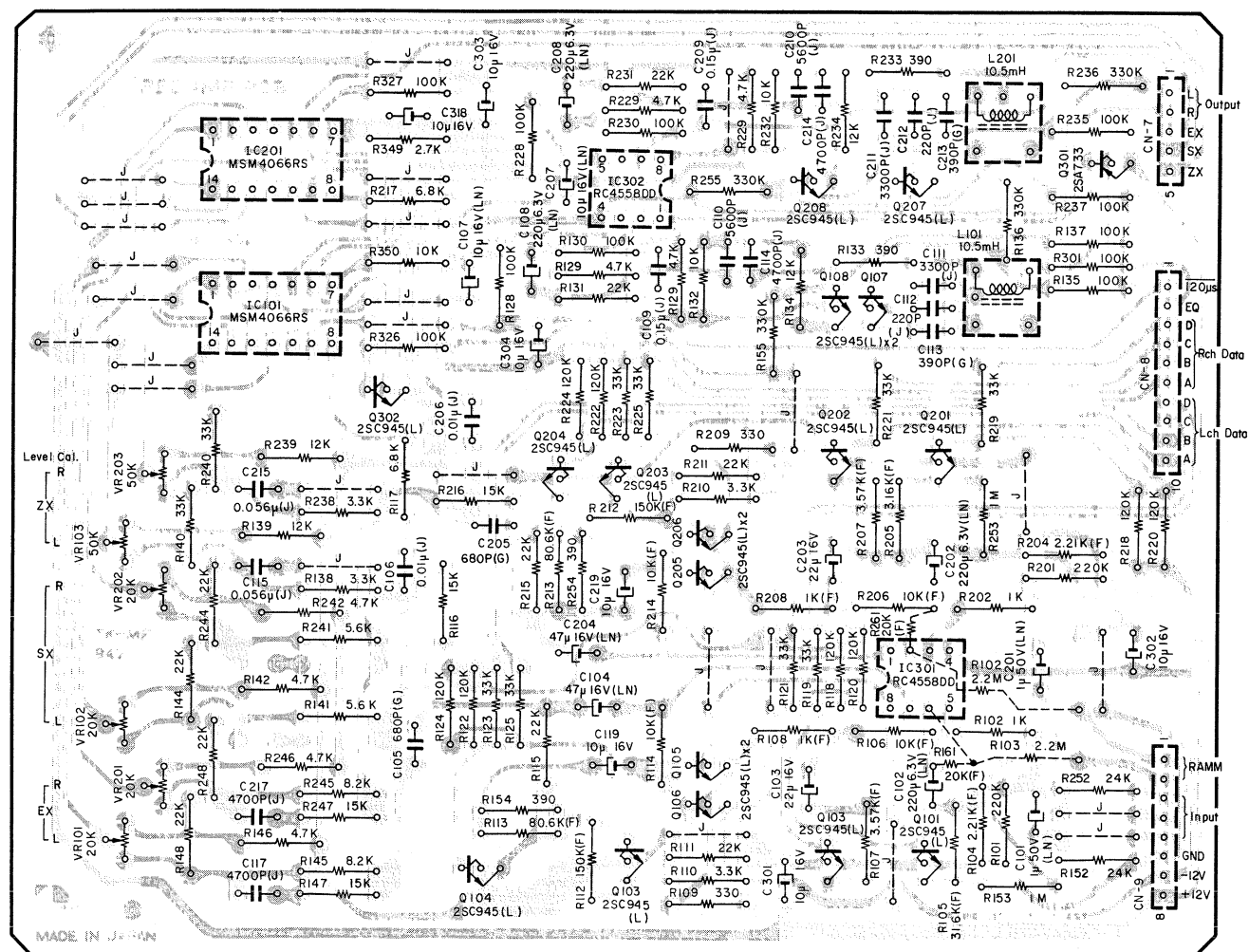


Fig. 7.22.2 1st Version

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04296A	Record Eq. Amp. P.C.B. Ass'y			
		1st Version	R152,252	OB09548A	Carbon Resistor 24K ERD-25T J
			R153,253	OB05776A	Carbon Resistor 1M ERD-25T J
			R161,261	OB09439A	Metal Film Resistor 20K SN14K2E F
			R349	OB05629A	Carbon Resistor 2.7K ERD-25T J
IC101,201	OB07902A	Record Eq. Amp. P.C.B.	C101,201	OB09223A	Electrolytic Capacitor 1μ 50V (LN)
L101,201	OB06280A	IC MSM4066RS	C102,108	OB09151A	Electrolytic Capacitor 220μ 6.3V (LN)
Q101-108	OB06146A	IC RC4558DD			
201-208	OB01872A	Transistor 2SC945 (L) (17 pcs.)	C103,203	OB01862A	Electrolytic Capacitor 22μ 16V
302			C104,204	OB09218A	Electrolytic Capacitor 47μ 16V (LN)
Q301	OB06013A	Transistor 2SA733	C105,205	OB09485A	PP Capacitor 680P 100V G
L101,201	OB00068A	Trap Coil 10.5mH	C106,206	OB05681A	Mylar Capacitor 0.01μ 50V J
VR101,102	OB07215A	Semi-fixed Volume 20K	C107,207	OB09148A	Electrolytic Capacitor 10μ 16V (LN)
201,202			C109,209	OB09171A	Mylar Capacitor 0.15μ 50V J
VR103,203	OB07058A	Semi-fixed Volume 50K	C110,210	OB05659A	Mylar Capacitor 5600P 50V J
R101,201	OB05625A	Carbon Resistor 220K ERD-25T J	C111,211	OB01914A	Mylar Capacitor 3300P 50V J
R102,202	OB01857A	Carbon Resistor 1K ERD-25T J	C112,212	OB09247A	Mica Capacitor 220P 50V J
R103,203	OB05671A	Carbon Resistor 2.2M ERD-25T J	C113,213	OB09511A	PP Capacitor 390P 100V G
R104,204	OB09547A	Metal Film Resistor 2.21K SN14K2E F	C114,117	OB05652A	Mylar Capacitor 4700P 50V J
R105,205	OB09422A	Metal Film Resistor 3.16K SN14K2E F			
R106,114	OB09203A	Metal Film Resistor 10K SN14K2E F	C115,215	OB05813A	Mylar Capacitor 0.056μ 50V J
206,214			C119,219	OB01412A	Electrolytic Capacitor 10μ 16V
R107,207	OB09507A	Metal Film Resistor 3.57K SN14K2E F	301,302		
R108,208	OB09491A	Metal Film Resistor 1K SN14K2E F	303,304		
R109,209	OB05577A	Carbon Resistor 330 ERD-25T J	318		
R110,138	OB01681A	Carbon Resistor 3.3K ERD-25T J	CN7	OB08727A	5P-S Connector
210,238			CN8	OB08731A	10P-S Connector
R111,115	OB05615A	Carbon Resistor 22K ERD-25T J	CN9	OB08730A	8P-S Connector
131,144					
148,211					
215,231					
244,248					
R112,212	OB09300A	Metal Film Resistor 150K SN14K2E F			
R113,213	OB09459A	Metal Film Resistor 80.6K SN14K2E F			
R116,147	OB01683A	Carbon Resistor 15K ERD-25T J			
216,247					
R117,217	OB01682A	Carbon Resistor 6.8K ERD-25T J			
R118,120	OB05621A	Carbon Resistor 120K ERD-25T J			
122,124					
218,220					
222,224					
R119,121	OB05509A	Carbon Resistor 33K ERD-25T J			
123,125					
140,219					
221,223					
225,240					
R128,130	OB01889A	Carbon Resistor 100K ERD-25T J			
135,137					
228,230					
235,237					
301,326					
327					
R129,142	OB01846A	Carbon Resistor 4.7K ERD-25T J			
146,229					
242,246					
R132,232	OB01888A	Carbon Resistor 10K ERD-25T J			
350					
R133,154	OB05691A	Carbon Resistor 390 ERD-25T J			
233,254					
R134,139	OB09263A	Carbon Resistor 12K ERD-25T J			
234,239					
R136,155	OB05627A	Carbon Resistor 330K ERD-25T J			
236,255					
R141,241	OB01887A	Carbon Resistor 5.6K ERD-25T J			
R145,245	OB01856A	Carbon Resistor 8.2K ERD-25T J			

7.23. Record Dolby NR P.C.B. Ass'y

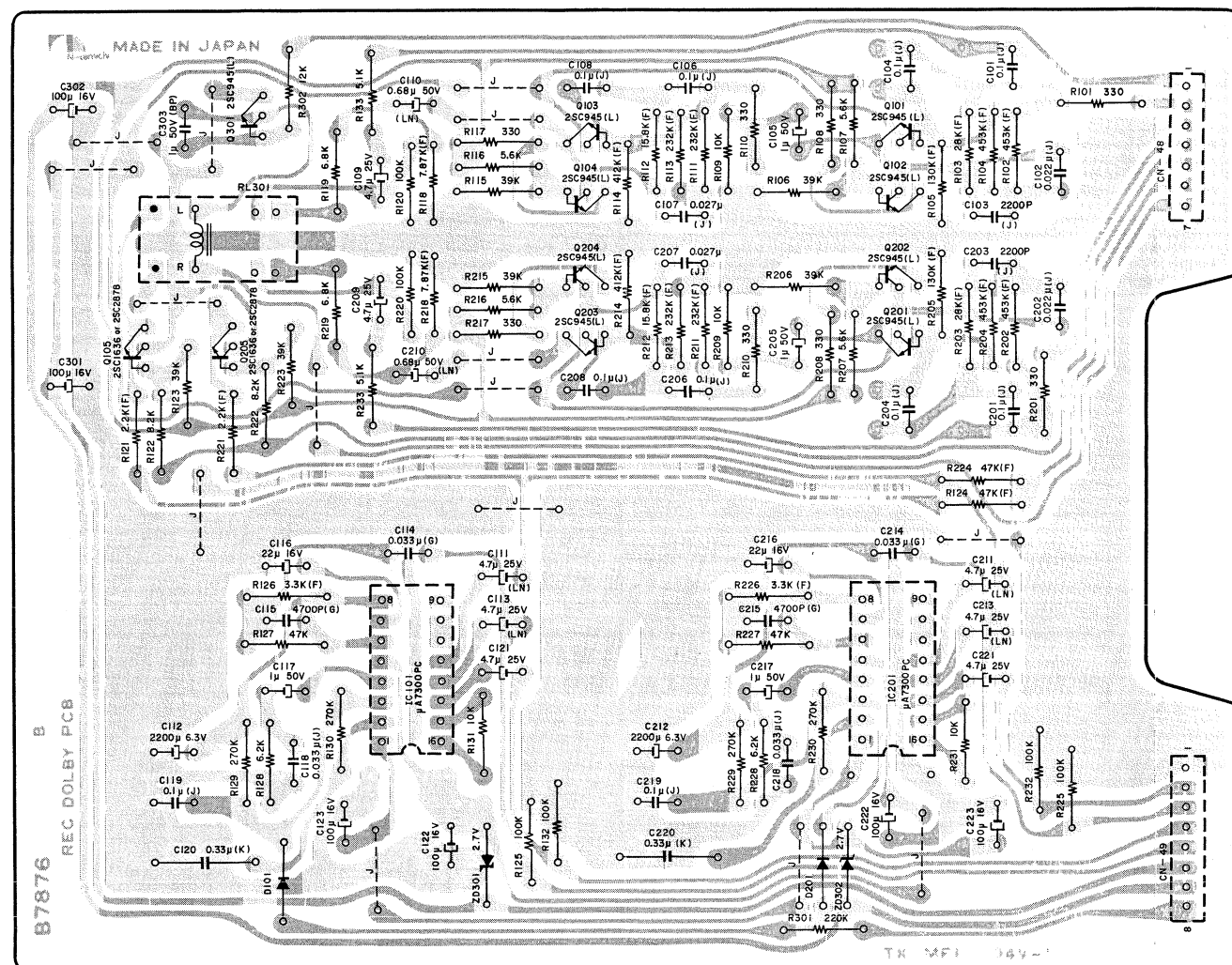


Fig. 7.23

Note: Diode is 1SS53 unless otherwise specified.

[illegible]

Schematic Ref. No.	Part No.	Description
R134,234	OB01679A	Carbon Resistor 100 ERD-25T J
R301	OB05625A	Carbon Resistor 220K ERD-25T J
R303,304	OB09306A	Fail Safe Type Resistor 68 RDF-25S J
C101,201	OB09486A	Mica Capacitor 120P 50V J
C102,202	OB05681A	Mylar Capacitor 0.01 μ 50V J
C103,203	OB09152A	Electrolytic Capacitor 470 μ 6.3V (LN)
C104,204	OB09489A	PP Capacitor 5600P 100V G
C105,205	OB05550A	Mylar Capacitor 1000P 50V J
C106,206	OB09345A	Electrolytic Capacitor 3.3 μ 25V (BP)
C107,108	OB01400A	Electrolytic Capacitor 100 μ 16V
128,129		
207,208		
228,229		
303,304		
305,306		
C109,209	OB09410A	PP Capacitor 2200P 100V J
C110,113	OB09189A	Mylar Capacitor 2700P 50V J
210,213		
C111,211	OB09275A	Mica Capacitor 200P 50V J
C112,212	OB09235A	PP Capacitor 680P 100V J
C114,116	OB05813A	Mylar Capacitor 0.056 μ 50V J
214,216		
C115,126	OB01780A	Mylar Capacitor 0.1 μ 50V J
215,226		
C117,217	OB09413A	PP Capacitor 0.022 μ 100V G
C118,122	OB09333A	Electrolytic Capacitor 4.7 μ 25V (LN)
218,222		
C119,219	OB09257A	Electrolytic Capacitor 2200 μ 6.3V
C120,220	OB09240A	PP Capacitor 0.033 μ 100V G
C121,221	OB09191A	PP Capacitor 4700P 100V G
C123,223	OB01862A	Electrolytic Capacitor 22 μ 16V
C124,224	OB01405A	Electrolytic Capacitor 1 μ 50V
C125,225	OB05583A	Mylar Capacitor 0.033 μ 50V J
C127,227	OB09399A	Mylar Capacitor 0.33 μ 100V K
C130,230	OB09400A	Mica Capacitor 250P 50V J
C131,231	OB09270A	PP Capacitor 470P 50V J
C301,302	OB01412A	Electrolytic Capacitor 10 μ 16V
CN44	OB08727A	5P-S Connector
CN47	OB08728A	6P-S Connector
CN53	OB08654A	4P-T Post
	OB08714A	IC Socket 16P (2 pcs.)

7.24. Playback Amp. & Dolby NR P.C.B. Ass'y

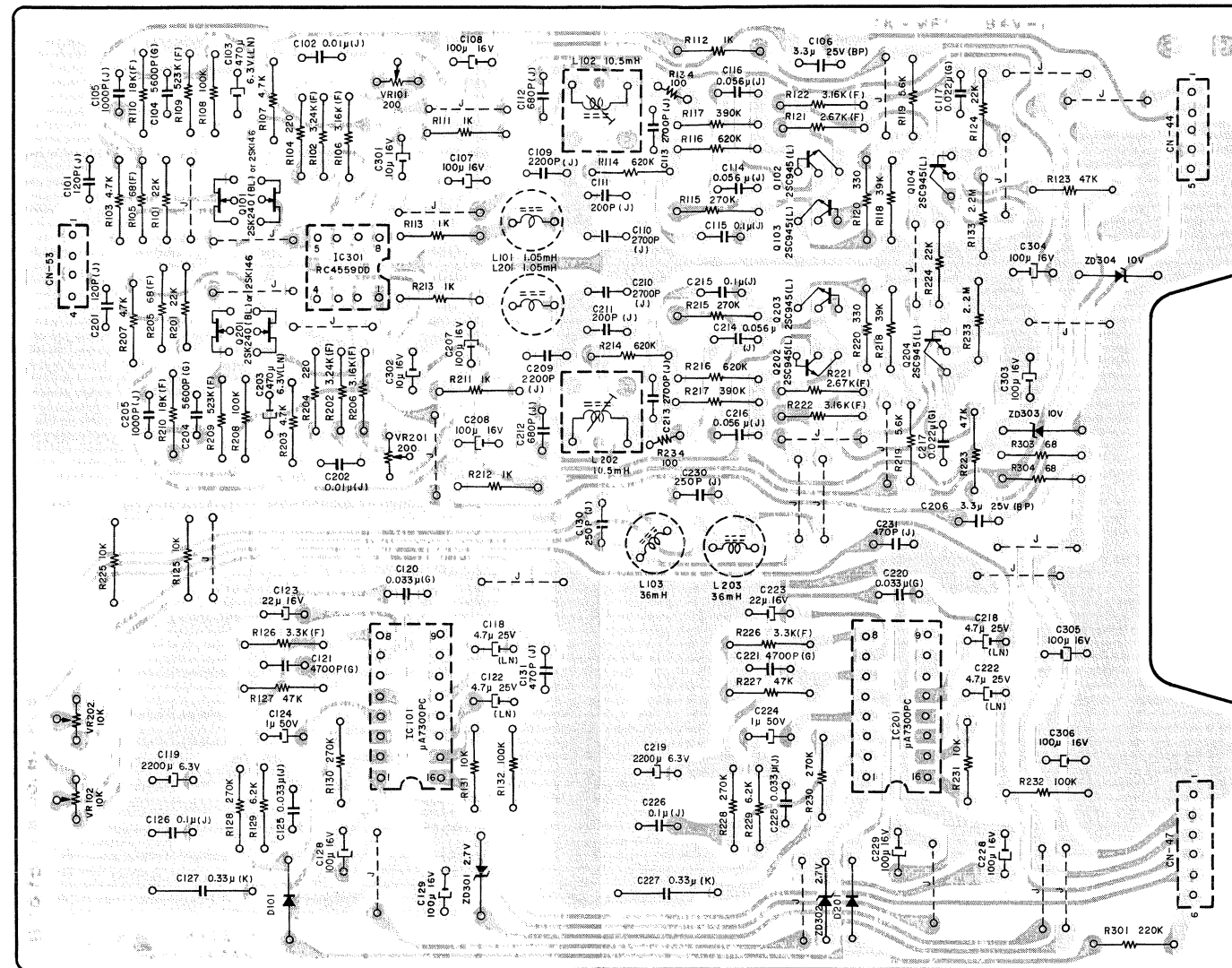


Fig. 7.24

Note: Diode is 1SS53 unless otherwise specified.

7.25. Oscillator P.C.B. Ass'y

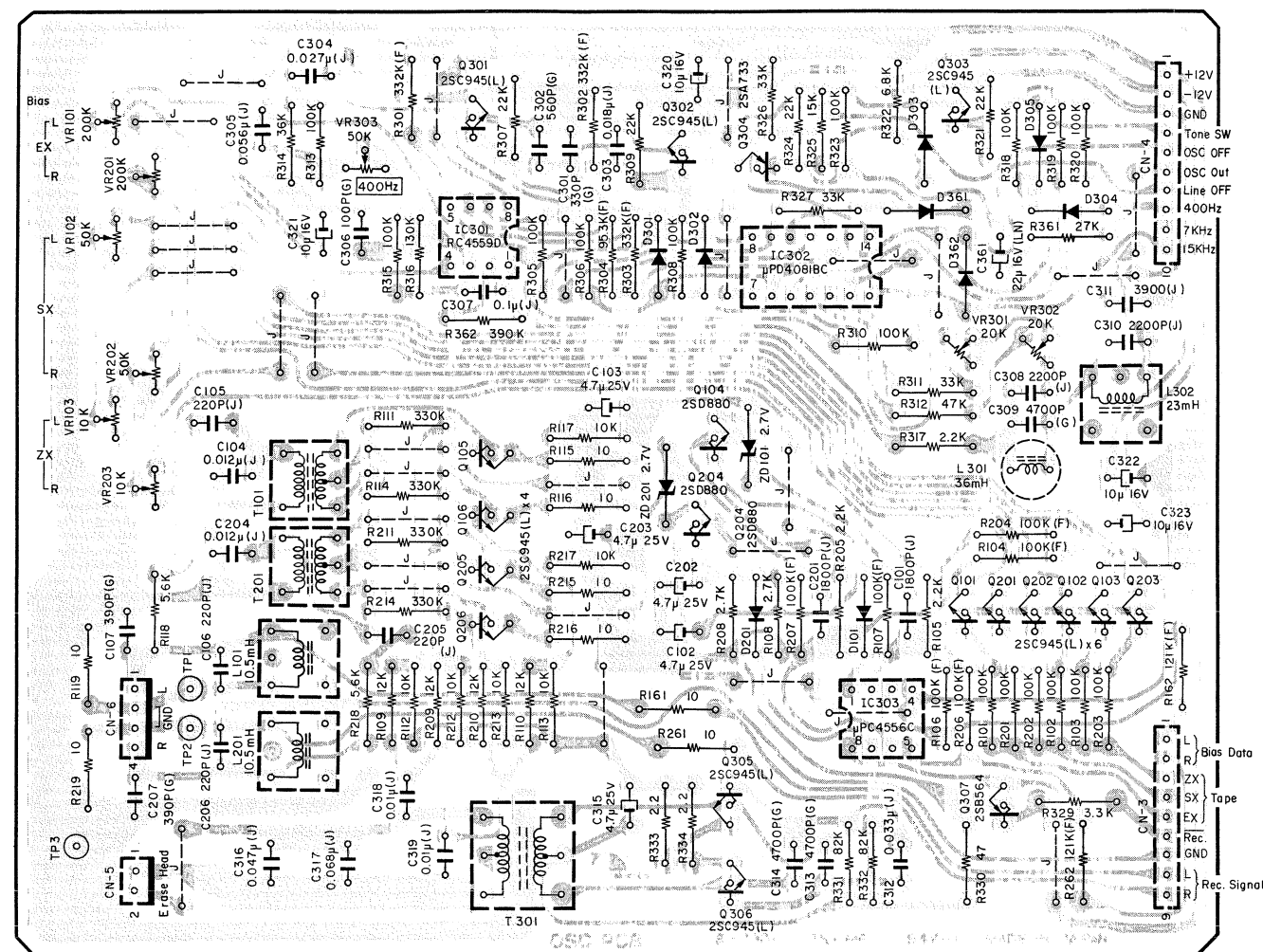


Fig. 7.25.1 2nd Version Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04302A	Oscillator P.C.B. Ass'y 2nd Version		- Rec. Bias -	
	- Test Tone -		IC303	OB06216A	IC μ PC4556C
IC301	OB06127A	IC RC4559D	Q101-103	OB01872A	Transistor 2SC945 (L) (10 pcs.)
IC302	OB06129A	IC μ PD4081BC	105,106		
Q301,302	OB01872A	Transistor 2SC945 (L)	201-203		
Q303			205,206		
Q304	OB06013A	Transistor 2SA733	Q104,204	OB06255A	Transistor 2SD880 (Y)
D301-304	OB06181A	Silicon Diode 1SS53 (7 pcs.)	ZD101,201	OB06191A	Zener Diode 2.7V
305,361			D101,201	OB06181A	Silicon Diode 1SS53
362			T101,201	OB06646B	Bias Transformer
L301	OB03919B	Inductor 36mH	L101,201	OB00068A	Trap Coil 10.5mH
L302	OB03563A	19 kHz Coil 23mH	VR101,201	OB07161A	Semi-fixed Volume 200K
VR301,302	OB07215A	Semi-fixed Volume 20K	VR102,202	OB07058A	Semi-fixed Volume 50K
VR303	OB07058A	Semi-fixed Volume 50K	VR103,203	OB07162A	Semi-fixed Volume 10K
R301,302	OB09315A	Metal Film Resistor 332K SN14K2E F	R101-103	OB01889A	Carbon Resistor 100K ERD-25T J
303			201-203		(6 pcs.)
R304	OB09462A	Metal Film Resistor 95.3K SN14K2E F	R104,106	OB09305A	Metal Film Resistor 100K SN14K2E F
R305,306	OB01889A	Carbon Resistor 100K ERD-25T J	107,204		
308,310			206,207		
313,315			R105,205	OB05622A	Carbon Resistor 2.2K ERD-25T J
318,319			R108,208	OB05629A	Carbon Resistor 2.7K ERD-25T J
320,323			R109,110	OB09263A	Carbon Resistor 12K ERD-25T J
R307,309	OB05615A	Carbon Resistor 22K ERD-25T J	209,210		
321,324			R111,114	OB05627A	Carbon Resistor 330K ERD-25T J
R311,326	OB05509A	Carbon Resistor 33K ERD-25T J	211,214		
327			R112,113	OB01888A	Carbon Resistor 10K ERD-25T J
R312	OB05641A	Carbon Resistor 47K ERD-25T J	213,217		
R314	OB09169A	Carbon Resistor 36K ERD-25T J	R115,116	OB05936A	Carbon Resistor 10 ERD-25T J
R316	OB09527A	Carbon Resistor 130K ERD-25T J	119,161		
R317	OB05622A	Carbon Resistor 2.2K ERD-25T J	215,216		
R322	OB01682A	Carbon Resistor 6.8K ERD-25T J	219,261		
R325	OB01683A	Carbon Resistor 15K ERD-25T J	R118,218	OB01887A	Carbon Resistor 5.6K ERD-25T J
R361	OB05743A	Carbon Resistor 27K ERD-25T J	R162,262	OB09464A	Metal Film Resistor 121K SN14K2E F
R362	OB05676A	Carbon Resistor 390K ERD-25T J	C101,201	OB01913A	Mylar Capacitor 1800P 50V J
C301	OB09325A	PP Capacitor 330P 100V G	C102,103	OB01402A	Electrolytic Capacitor 4.7 μ 25V
C302	OB09414A	PP Capacitor 560P 100V G	202,203		
C303	OB05832A	Mylar Capacitor 0.018 μ 50V J	C104,204	OB05843A	Mylar Capacitor 0.012 μ 50V J
C304	OB09045A	Mylar Capacitor 0.027 μ 50V J	C105,106	OB09247A	Mica Capacitor 220P 50V J
C305	OB05813A	Mylar Capacitor 0.056 μ 50V J	205,206		
C306	OB09302A	Mica Capacitor 100P 50V G	C107,207	OB09511A	PP Capacitor 390P 100V G
C307	OB01780A	Mylar Capacitor 0.1 μ 50V J	C318,319	OB05681A	Mylar Capacitor 0.01 μ 50V J
C308,310	OB01802A	Mylar Capacitor 2200P 50V J	C322,323	OB01412A	Electrolytic Capacitor 10 μ 16V
C309	OB09484A	PP Capacitor 4700P 100V G		- Miscellaneous -	
C311	OB01804A	Mylar Capacitor 3900P 50V J		OB07901B	Oscillator P.C.B.
C320,321	OB01412A	Electrolytic Capacitor 10 μ 16V		OB08814A	9P-S Connector
C361	OB09137A	Electrolytic Capacitor 22 μ 16V (LN)		OB08731A	10P-S Connector
	- Erase Osc. -			OB08656A	2P-T Post
Q305,306	OB01872A	Transistor 2SC945 (L)		OB08654A	4P-T Post
Q307	OB06069A	Transistor 2SB564			
T301	OB06647A	Erase Transformer			
R329	OB01681A	Carbon Resistor 3.3K ERD-25T J			
R330	OB09177A	Fail Safe Type Resistor 47 RDF-25S J			
R331,332	OB05668A	Carbon Resistor 82K ERD-25T J			
R333,334	OB09212A	Fail Safe Type Resistor 2.2 RDF-25S J			
C312	OB05583A	Mylar Capacitor 0.033 μ 50V J			
C313,314	OB09191A	PP Capacitor 4700P 100V G			
C315	OB01402A	Electrolytic Capacitor 4.7 μ 25V			
C316	OB09248A	PP Capacitor 0.047 μ 50V J			
C317	OB09254A	PP Capacitor 0.068 μ 50V J			

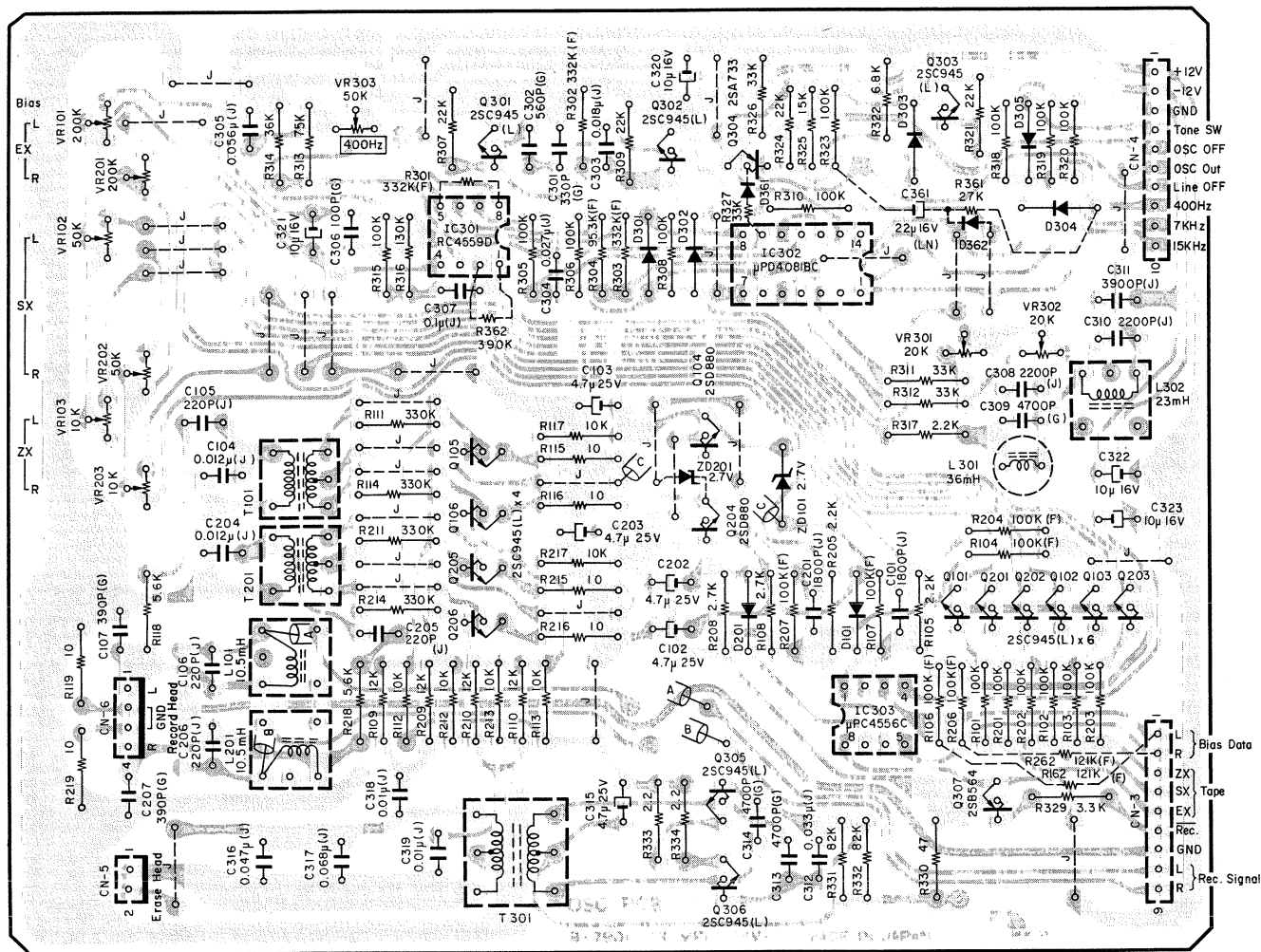


Fig. 7.25.2 1st Version Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04302A	Oscillator P.C.B. Ass'y 1st Version			— Rec. Bias —
	— Test Tone —		IC303	OB06216A	IC μ PC4556C
IC301	OB06127A	IC RC4559D	Q101-103	OB01872A	Transistor 2SC945 (L) (10 pcs.)
IC302	OB06129A	IC μ PD4081BC	105,106		
Q301,302	OB01872A	Transistor 2SC945 (L)	201-203		
303			205,206		
Q304	OB06013A	Transistor 2SA733	Q104,204	OB06255A	Transistor 2SD880 (Y)
D301-304	OB06181A	Silicon Diode 1SS53 (7 pcs.)	ZD101,201	OB06191A	Zener Diode 2.7V 2.7EB
305,361			D101,201	OB06181A	Silicon Diode 1SS53
362			T101,201	OB06646B	Bias Transformer
L301	OB03919B	Inductor 36mH	L101,201	OB00068A	Trap Coil 10.5mH
L302	OB03563A	19 kHz Coil 23mH	VR101,201	OB07161A	Semi-fixed Volume 200K
VR301,302	OB07215A	Semi-fixed Volume 20K	VR102,202	OB07058A	Semi-fixed Volume 50K
VR303	OB07058A	Semi-fixed Volume 50K	VR103,203	OB07162A	Semi-fixed Volume 10K
R301,302	OB09315A	Metal Film Resistor 332K SN14K2E F	R101-103	OB01889A	Carbon Resistor 100K ERD-25T J (6 pcs.)
303			R104,106	OB09305A	Metal Film Resistor 100K SN14K2E F
R304	OB09462A	Metal Film Resistor 95.3K SN14K2E F	107,204		
R305,306	OB01889A	Carbon Resistor 100K ERD-25T J	206,207		
308,310			R105,205	OB05622A	Carbon Resistor 2.2K ERD-25T J
315,318			R108,208	OB05629A	Carbon Resistor 2.7K ERD-25T J
319,320			R109,110	OB09263A	Carbon Resistor 12K ERD-25T J
323			209,210		
R307,309	OB05615A	Carbon Resistor 22K ERD-25T J	R111,114	OB05627A	Carbon Resistor 330K ERD-25T J
321,324			211,214		
R311,312	OB05509A	Carbon Resistor 33K ERD-25T J	R112,113	OB01888A	Carbon Resistor 10K ERD-25T J
326,327			117,212		
R313	OB05641A	Carbon Resistor 47K ERD-25T J	213,217		
R314	OB09169A	Carbon Resistor 36K ERD-25T J	R115,116	OB05936A	Carbon Resistor 10 ERD-25T J
R316	OB09527A	Carbon Resistor 130K ERD-25T J	119,215		
R317	OB05622A	Carbon Resistor 2.2K ERD-25T J	216,219		
R322	OB01682A	Carbon Resistor 6.8K ERD-25T J	R118,218	OB01887A	Carbon Resistor 5.6K ERD-25T J
R325	OB01683A	Carbon Resistor 15K ERD-25T J	R162,262	OB09464A	Metal Film Resistor 121K SN14K2E F
R361	OB05743A	Carbon Resistor 27K ERD-25T J	C101,201	OB01913A	Mylar Capacitor 1800P 50V J
R362	OB05676A	Carbon Resistor 390K ERD-25T J	C102,103	OB01402A	Electrolytic Capacitor 4.7 μ 25V
C301	OB09325A	PP Capacitor 330P 100V G	C104,204	OB05843A	Mylar Capacitor 0.012 μ 50V J
C302	OB09414A	PP Capacitor 560P 100V G	C105,106	OB09247A	Mica Capacitor 220P 50V J
C303	OB05832A	Mylar Capacitor 0.018 μ 50V J	205,206		
C304	OB09045A	Mylar Capacitor 0.027 μ 50V J	C107,207	OB09511A	PP Capacitor 390P 100V G
C305	OB05813A	Mylar Capacitor 0.056 μ 50V J	C318,319	OB05681A	Mylar Capacitor 0.01 μ 50V J
C306	OB09302A	Mica Capacitor 100P 50V G	C322,323	OB01412A	Electrolytic Capacitor 10 μ 16V
C307	OB01780A	Mylar Capacitor 0.1 μ 50V J			— Miscellaneous —
C308,310	OB01802A	Mylar Capacitor 2200P 50V J	OB07901A		Oscillator P.C.B.
C309	OB09484A	PP Capacitor 4700P 100V G	OB08814A		9P-S Connector
C311	OB01804A	Mylar Capacitor 3900P 50V J	OB08731A		10P-S Connector
C320,321	OB01412A	Electrolytic Capacitor 10 μ 16V	OB08656A		2P-T Post
C361	OB09137A	Electrolytic Capacitor 22 μ 16V (LN)	OB08654A		4P-T Post
	— Erase Osc. —				
Q305,306	OB01872A	Transistor 2SC945 (L)			
Q307	OB06069A	Transistor 2SB564			
T301	OB06647A	Erase Transformer			
R329	OB01681A	Carbon Resistor 3.3K ERD-25T J			
R330	OB09177A	Fail Safe Type Resistor 47 RDF-25S J			
R331,332	OB05668A	Carbon Resistor 82K ERD-25T J			
R333,334	OB09212A	Fail Safe Type Resistor 2.2 RDF-25S J			
C312	OB05583A	Mylar Capacitor 0.033 μ 50V J			
C313,314	OB09191A	PP Capacitor 4700P 100V G			
C315	OB01402A	Electrolytic Capacitor 4.7 μ 25V			
C316	OB09248A	PP Capacitor 0.047 μ 50V J			
C317	OB09254A	PP Capacitor 0.068 μ 50V J			

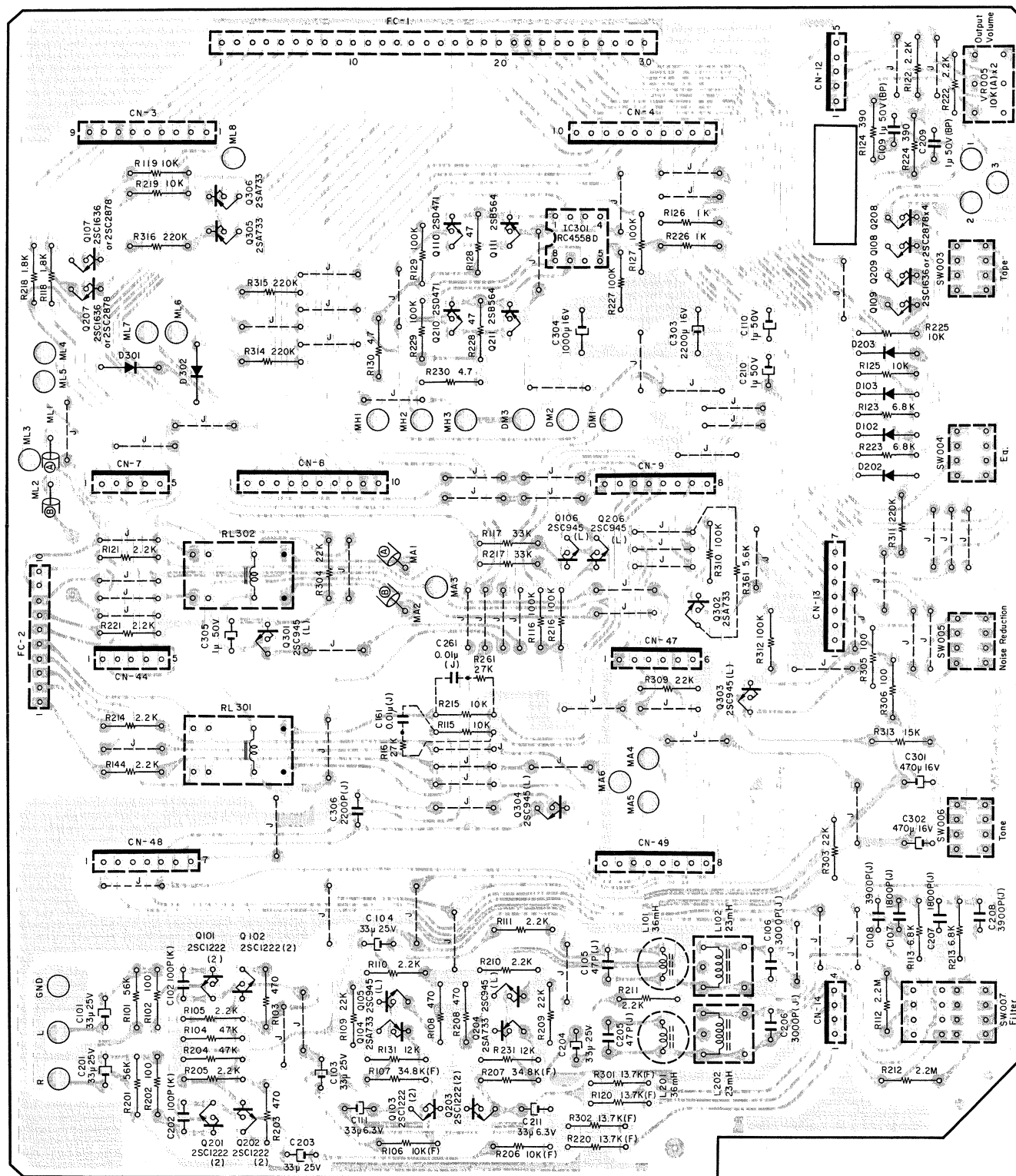
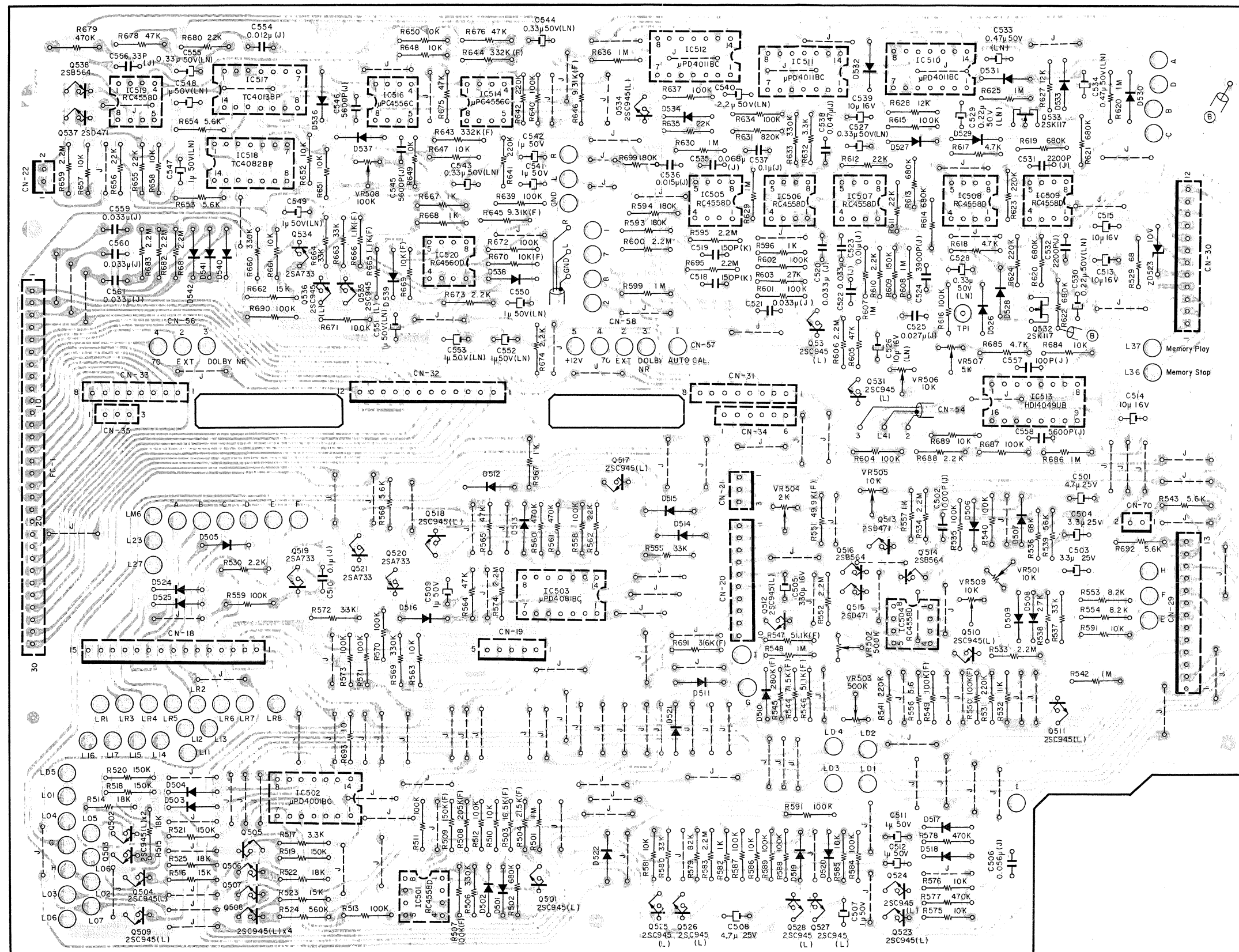


Fig. 7.26.2 1st Version Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04281A	Mother P.C.B. Ass'y 1st Version	R161,261 R314,315 316 C161,261	OB05743A OB05625A OB05681A	Carbon Resistor 27K ERD-25T J Carbon Resistor 220K ERD-25T J Mylar Capacitor 0.01μ 50V J
	— MIX Amp. —			— Line Mute —	
Q101,102 103,201 202,203 Q104,204 Q105,205 L101,201 L102,202 R101,201 R102,202 R103,108 203,208 R104,204 R105,110 111,205 210,211 R106,206 R120,220 301,302 R107,207 R109,209 303 R112,212 R113,213 R131,231 C101,103 104,201 203,204 C102,202 C105,205 C106,206 C107,207 C108,208 C111,211 SW007	OB06062A OB06013A OB01872A OB03919B OB03563A OB05508A OB01679A OB05576A OB05641A OB05622A OB09203A OB09523A OB09447A OB05615A OB05671A OB01682A OB09263A OB09251A OB09282A OB09242A OB09262A OB01913A OB01804A OB09033A OB07348A	Transistor 2SC1222 (2) Transistor 2SA733 Transistor 2SC945 (L) Inductor 36mH 19 kHz Coil 23mH Carbon Resistor 56K ERD-25T J Carbon Resistor 100 ERD-25T J Carbon Resistor 470 ERD-25T J Carbon Resistor 47K ERD-25T J Carbon Resistor 2.2K ERD-25T J Metal Film Resistor 10K SN14K2E F Metal Film Resistor 13.7K SN14K2E F Metal Film Resistor 34.8K SN14K2E F Carbon Resistor 22K ERD-25T J Carbon Resistor 2.2M ERD-25T J Carbon Resistor 6.8K ERD-25T J Carbon Resistor 12K ERD-25T J Electrolytic Capacitor 33μ 25V Ceramic Capacitor 100P 50V K Mica Capacitor 47P 50V J PP Capacitor 3000P 100V J Mylar Capacitor 1800P 50V J Mylar Capacitor 3900P 50V J Tantalum Capacitor 33μ 6.3V Rotary Switch 4-3	Q108,109 208,209 Q304 D102,103 202,203 VR005 R122,222 R123,223 R124,224 R125,225 C109,209 C306 IC301 Q110,210 Q111,211 R126,226 R127,129 227,229 R128,228 R130,230 C110,210 Q303 R311 R312 R313 SW003,005 SW004,006	OB06070A (OB06299A) OB01872A OB06181A OB07347A OB05622A OB01682A OB05691A OB01888A OB09187A OB01802A OB06124B OB06066A OB06069A OB01857A OB01889A OB01706A OB09321A OB01405A OB01872A OB05625A OB01889A OB01683A OB07350A OB07349A	Transistor 2SC1636 (2SC2878) Transistor 2SC945 (L) Silicon Diode 1SS53 Volume 10K(A) x 2 Carbon Resistor 2.2K ERD-25T J Carbon Resistor 6.8K ERD-25T J Carbon Resistor 390 ERD-25T J Carbon Resistor 10K ERD-25T J Electrolytic Capacitor 1μ 50V (BP) Mylar Capacitor 2200P 50V J IC RC4558D Transistor 2SD471 Transistor 2SB564 Carbon Resistor 1K ERD-25T J Carbon Resistor 100K ERD-25T J Carbon Resistor 47 ERD-25T J Fail Safe Type Resistor 4.7RDF-25S J Electrolytic Capacitor 1μ 50V — Switch — Transistor 2SC945 (L) Carbon Resistor 220K ERD-25T J Carbon Resistor 100K ERD-25T J Carbon Resistor 15K ERD-25T J Rotary Switch 2-3 Rotary Switch 2-2 — Power Supply — Fail Safe Type Resistor 100 RDF-25S J Electrolytic Capacitor 470μ 16V Electrolytic Capacitor 2200μ 16V Electrolytic Capacitor 1000μ 16V — Miscellaneous — Mother P.C.B. 9P-T Post 10P-T Post 5P-T Post 8P-T Post 7P-T Post 4P-T Post 6P-T Post 10P Flat Cable x 3 80mm 10P Flat Cable 120mm
	— NR Switch —			— HP Amp. —	
Q301 Q302 R114,121 214,221 R304,309 R310 R361 C305 RL301,302	OB01872A OB06013A OB05622A OB05615A OB01889A OB01887A OB01405A OB07326A	Transistor 2SC945 (L) Transistor 2SA733 Carbon Resistor 2.2K ERD-25T J Carbon Resistor 22K ERD-25T J Carbon Resistor 100K ERD-25T J Carbon Resistor 5.6K ERD-25T J Electrolytic Capacitor 1μ 50V FBR Relay	R305,306 C301,302 C303 C304	OB09215A OB01392A OB01406A OB01397A	Fail Safe Type Resistor 100 RDF-25S J Electrolytic Capacitor 470μ 16V Electrolytic Capacitor 2200μ 16V Electrolytic Capacitor 1000μ 16V
	— Rec. Mute —		UN3 UN4,8 UN7,12 44 UN9,49 UN13,48 UN14 UN47 FC1 FC2	OB07904A OB08614A OB08615A OB08183A OB08334A OB08302A OB08236A OB08182A OB05250A OB05249A	Mother P.C.B. 9P-T Post 10P-T Post 5P-T Post 8P-T Post 7P-T Post 4P-T Post 6P-T Post 10P Flat Cable x 3 80mm 10P Flat Cable 120mm
Q106,206 Q107,207 Q305,306 D301,302 R115,119 215,219 R116,216 R117,217 R118,218	OB01872A OB06070A (OB06299A) OB06013A OB06181A OB01888A OB01889A OB05509A OB09518A	Transistor 2SC945 (L) Transistor 2SC1636 (2SC2878) Transistor 2SA733 Silicon Diode 1SS53 Carbon Resistor 10K ERD-25T J Carbon Resistor 100K ERD-25T J Carbon Resistor 33K ERD-25T J Carbon Resistor 1.8K ERD-25T J			

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	
	BA04278A	Main Logic P.C.B. Ass'y 2nd Version	Q513,515	0B06066A	Transistor 2SD471	VR508	0B07257A	Semi-fixed Volume 100K	R631	0B09320A	Carbon Resistor 820K ERD-25T J	
			Q514	0B06303A	Transistor 2SB772	R639,640	0B01889A	Carbon Resistor 100K ERD-25T J	R632	0B01681A	Carbon Resistor 3.3K ERD-25T J	
			Q516	0B06069A	Transistor 2SB564	671,672			R633	0B05627A	Carbon Resistor 330K ERD-25T J	
			D506-511	0B06181A	Silicon Diode 1SS53 (6 pcs.)	R641,642	0B05625A	Carbon Resistor 220K ERD-25T J	C518,519	0B09281A	Ceramic Capacitor 150P 50V K	
			VR501,505	0B07256A	Semi-fixed Volume 10K	R643,644	0B09315A	Metal Film Resistor 332K SN14K2E F	C520,521	0B05583A	Mylar Capacitor 0.033μ 50V J	
	IC502	0B06143A	IC μPD4001BC	509		R645,646	0B09564A	Metal Film Resistor 8.45K SN14K2E F	C523	0B05681A	Mylar Capacitor 0.01μ 50V J	
	Q502-509	0B01872A	Transistor 2SC945 (L) (8 pcs.)	VR502,503	0B07330A	Semi-fixed Volume 500K	R647-652	0B01888A	Carbon Resistor 10K ERD-25T J	C524	0B01804A	Mylar Capacitor 3900P 50V J
	D503,504	0B06181A	Silicon Diode 1SS53	VR504	0B07329A	Semi-fixed Volume 2K	657,658		C525	0B09045A	Mylar Capacitor 0.027μ 50V J	
	R514,515	0B05560A	Carbon Resistor 18K ERD-25T J	R531,541	0B05625A	Carbon Resistor 220K ERD-25T J	661		C526	0B09148A	Electrolytic Capacitor 10μ 16V (LN)	
	522,525			R532,557	0B01857A	Carbon Resistor 1K ERD-25T J	R653,654	0B01887A	Carbon Resistor 5.6K ERD-25T J	C527,528	0B09327A	Electrolytic Capacitor 0.33μ 50V (LN)
R516,523	0B05591A	Carbon Resistor 15K ERD-25T J	R533,534	0B05671A	Carbon Resistor 2.2M ERD-25T J	R655,656	0B05615A	Carbon Resistor 22K ERD-25T J	C529,530	0B09144A	Electrolytic Capacitor 0.22μ 50V (LN)	
R517	0B01681A	Carbon Resistor 3.3K ERD-25T J	552			680		C531,532	0B01802A	Mylar Capacitor 2200P 50V J		
R518,519	0B05626A	Carbon Resistor 150K ERD-25T J	R535,540	0B01889A	Carbon Resistor 100K ERD-25T J	R659	0B05671A	Carbon Resistor 2.2M ERD-25T J	C533,534	0B09145A	Electrolytic Capacitor 0.47μ 50V (LN)	
520,521			R536	0B05692A	Carbon Resistor 68K ERD-25T J	R660	0B05627A	Carbon Resistor 330K ERD-25T J	C535	0B05682A	Mylar Capacitor 0.068μ 50V J	
R524	0B05784A	Carbon Resistor 560K ERD-25T J	R537,555	0B05509A	Carbon Resistor 33K ERD-25T J	R662	0B01683A	Carbon Resistor 15K ERD-25T J	C536	0B05557A	Mylar Capacitor 0.015μ 50V J	
			R538	0B05743A	Carbon Resistor 27K ERD-25T J	R663,664	0B05509A	Carbon Resistor 33K ERD-25T J	C537	0B01780A	Mylar Capacitor 0.1μ 50V J	
			R539	0B05508A	Carbon Resistor 56K ERD-25T J	R665,666	0B09505A	Metal Film Resistor 1.1K SN14K2E F	C538	0B05796A	Mylar Capacitor 0.047μ 50V J	
			R542,548	0B05776A	Carbon Resistor 1M ERD-25T J	R667,668	0B01857A	Carbon Resistor 1K ERD-25T J	C539	0B01412A	Electrolytic Capacitor 10μ 16V	
IC501	0B06124B	IC RC4558D	R544	0B09457A	Metal Film Resistor 71.5K SN14K2E F	R669,670	0B09203A	Metal Film Resistor 10K SN14K2E F	C540	0B09396A	Electrolytic Capacitor 2.2μ 50V (LN)	
Q501	0B01872A	Transistor 2SC945 (L)	R545	0B09474A	Metal Film Resistor 280K SN14K2E F	R673,674	0B05622A	Carbon Resistor 2.2K ERD-25T J				
D501,502	0B06181A	Silicon Diode 1SS53	R546,547	0B09453A	Metal Film Resistor 51.1K SN14K2E F	R675,676	0B05641A	Carbon Resistor 47K ERD-25T J				
R501	0B05776A	Carbon Resistor 1M ERD-25T J	R549,550	0B09305A	Metal Film Resistor 100K SN14K2E F	R678,679	0B01684A	Carbon Resistor 470K ERD-25T J				
R502	0B05868A	Carbon Resistor 680K ERD-25T J	R551	0B09452A	Metal Film Resistor 49.9K SN14K2E F	C541,542	0B01405A	Electrolytic Capacitor 1μ 50V	IC513	0B06249A	IC HD14049UB	
R503	0B09438A	Metal Film Resistor 16.5K SN14K2E F	R553,554	0B01856A	Carbon Resistor 8.2K ERD-25T J	C543,544	0B09327A	Electrolytic Capacitor 0.33μ 50V (LN)	VR507	0B09059A	Semi-fixed Volume 5K	
R504	0B09440A	Metal Film Resistor 21.5K SN14K2E F	R556	0B09217A	Fail Safe Type Resistor 5.6 RDF-25S J	C545,546	0B05681A	Mylar Capacitor 0.01μ 50V J	R684,689	0B01888A	Carbon Resistor 10K ERD-25T J	
R506	0B05627A	Carbon Resistor 330K ERD-25T J	R691	0B09475A	Metal Film Resistor 316K SN14K2E F	C547-553	0B09223A	Electrolytic Capacitor 1μ 50V (LN)	R685	0B01846A	Carbon Resistor 4.7K ERD-25T J	
R507	0B09305A	Metal Film Resistor 100K SN14K2E F	C501	0B01402A	Electrolytic Capacitor 4.7μ 25V			(7 pcs.)	R686	0B05776A	Carbon Resistor 1M ERD-25T J	
R508	0B09471A	Metal Film Resistor 205K SN14K2E F	C502	0B09277A	Ceramic Capacitor 10P 50V J	C554	0B05843A	Mylar Capacitor 0.012μ 50V J	R687	0B01889A	Carbon Resistor 100K ERD-25T J	
R509	0B09300A	Metal Film Resistor 150K SN14K2E F	C503,504	0B01396A	Electrolytic Capacitor 3.3μ 25V	C555	0B09327A	Electrolytic Capacitor 0.33μ 50V (LN)	R688	0B05622A	Carbon Resistor 2.2K ERD-25T J	
R510	0B01888A	Carbon Resistor 10K ERD-25T J	C505	0B01502A	Electrolytic Capacitor 330μ 16V	C556	0B09370A	Ceramic Capacitor 33P 50V J	C557	0B09302A	Mica Capacitor 100P 50V J	
R511,512	0B01889A	Carbon Resistor 100K ERD-25T J							C558	0B05659A	Mylar Capacitor 5600P 50V J	
513												



Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04278A	Main Logic P.C.B. Ass'y 1st Version	Q513,515	OB06066A	Transistor 2SD471	VR508	OB07257A	Semi-fixed Volume 100K	R631	OB09320A	Carbon Resistor 820K ERD-25T J
			Q514,516	OB06069A	Transistor 2SB564	R639,640	OB01889A	Carbon Resistor 100K ERD-25T J	R632	OB01681A	Carbon Resistor 3.3K ERD-25T J
			D506-511	OB06181A	Silicon Diode 1SS53 (6 pcs.)	671,672			R633	OB05627A	Carbon Resistor 330K ERD-25T J
	-- Lamp Mode --		VR501,505	OB07256A	Semi-fixed Volume 10K	R641,642	OB05625A	Carbon Resistor 220K ERD-25T J	C518,519	OB09281A	Ceramic Capacitor 150P 50V K
IC502	OB06143A	IC μ PD4001BC	509			R643,644	OB09315A	Metal Film Resistor 332K SN14K2E F	C520,521	OB05583A	Mylar Capacitor 0.033 μ 50V J
Q502-509	OB01872A	Transistor 2SC945 (L) (8 pcs.)	VR502,503	OB07330A	Semi-fixed Volume 500K	R645,646	OB09546A	Metal Film Resistor 9.31K SN14K2E F	C523	OB05681A	Mylar Capacitor 0.01 μ 50V J
D503,504	OB06181A	Silicon Diode 1SS53	VR504	OB07329A	Semi-fixed Volume 2K	R647-652	OB01888A	Carbon Resistor 10K ERD-25T J	C524	OB01804A	Mylar Capacitor 3900P 50V J
R514,515	OB05560A	Carbon Resistor 18K ERD-25T J	R531,541	OB05625A	Carbon Resistor 220K ERD-25T J	657,658		(9 pcs.)	C525	OB09045A	Mylar Capacitor 0.027 μ 50V J
522,525			R532,557	OB01857A	Carbon Resistor 1K ERD-25T J	661			C526	OB09148A	Electrolytic Capacitor 10 μ 16V (LN)
R516,523	OB05591A	Carbon Resistor 15K ERD-25T J	R533,534	OB05671A	Carbon Resistor 2.2M ERD-25T J	R653,654	OB01887A	Carbon Resistor 5.6K ERD-25T J	C527,528	OB09327A	Electrolytic Capacitor 0.33 μ 50V (LN)
R517	OB01681A	Carbon Resistor 3.3K ERD-25T J	552			R655,656	OB05615A	Carbon Resistor 22K ERD-25T J	C529,530	OB09144A	Electrolytic Capacitor 0.22 μ 50V (LN)
R518,519	OB05626A	Carbon Resistor 150K ERD-25T J	R535,540	OB01889A	Carbon Resistor 100K ERD-25T J	680			C531,532	OB01802A	Mylar Capacitor 2200P 50V J
520,521			R536	OB05692A	Carbon Resistor 68K ERD-25T J	R659	OB05671A	Carbon Resistor 2.2M ERD-25T J	C533,534	OB09145A	Electrolytic Capacitor 0.47 μ 50V (LN)
R524	OB05784A	Carbon Resistor 560K ERD-25T J	R537,555	OB05509A	Carbon Resistor 33K ERD-25T J	R660	OB05627A	Carbon Resistor 330K ERD-25T J	C535	OB05682A	Mylar Capacitor 0.068 μ 50V J
			R538	OB05743A	Carbon Resistor 27K ERD-25T J	R662	OB01683A	Carbon Resistor 15K ERD-25T J	C536	OB05557A	Mylar Capacitor 0.015 μ 50V J
	-- Cam Sensor --		R539	OB05508A	Carbon Resistor 56K ERD-25T J	R663,664	OB05509A	Carbon Resistor 33K ERD-25T J	C537	OB01780A	Mylar Capacitor 0.1 μ 50V J
IC501	OB06124B	IC RC4558D	R542,548	OB05776A	Carbon Resistor 1M ERD-25T J	R665,666	OB09505A	Metal Film Resistor 1.1K SN14K2E F	C538	OB05796A	Mylar Capacitor 0.047 μ 50V J
Q501	OB01872A	Transistor 2SC945 (L)	R543,692	OB01887A	Carbon Resistor 5.6K ERD-25T J	R667,668	OB01857A	Carbon Resistor 1K ERD-25T J	C539	OB01412A	Electrolytic Capacitor 10 μ 16V
D501,502	OB06181A	Silicon Diode 1SS53	R544	OB09457A	Metal Film Resistor 71.5K SN14K2E F	R669,670	OB09203A	Metal Film Resistor 10K SN14K2E F	C540	OB09396A	Electrolytic Capacitor 2.2 μ 50V (LN)
R501	OB05776A	Carbon Resistor 1M ERD-25T J	R545	OB09474A	Metal Film Resistor 280K SN14K2E F	R673,674	OB05622A	Carbon Resistor 2.2K ERD-25T J		-- CPU Clock --	
R502	OB05868A	Carbon Resistor 680K ERD-25T J	R546,547	OB09453A	Metal Film Resistor 51.1K SN14K2E F	R675,676	OB05641A	Carbon Resistor 47K ERD-25T J	IC513	OB06249A	IC HD14049UB
R503	OB09438A	Metal Film Resistor 16.5K SN14K2E F	R549,550	OB09305A	Metal Film Resistor 100K SN14K2E F	R678,679	OB01684A	Carbon Resistor 470K ERD-25T J	VR507	OB09059A	Semi-fixed Volume 5K
R504	OB09440A	Metal Film Resistor 21.5K SN14K2E F	R551	OB09452A	Metal Film Resistor 49.9K SN14K2E F	C541,542	OB01405A	Electrolytic Capacitor 1 μ 50V	R684,689	OB01888A	Carbon Resistor 10K ERD-25T J
R506	OB05627A	Carbon Resistor 330K ERD-25T J	R553,554	OB01856A	Carbon Resistor 8.2K ERD-25T J	C543,544	OB09327A	Electrolytic Capacitor 0.33 μ 50V (LN)	R685	OB01846A	Carbon Resistor 4.7K ERD-25T J
R507	OB09305A	Metal Film Resistor 100K SN14K2E F	R556	OB09217A	Fail Safe Type Resistor 5.6 RDF-25S J	C545,546	OB05659A	Mylar Capacitor 5600P 50V J	R686	OB05776A	Carbon Resistor 1M ERD-25T J
R508	OB09471A	Metal Film Resistor 205K SN14K2E F	R691	OB09475A	Metal Film Resistor 316K SN14K2E F	C547-553	OB09223A	Electrolytic Capacitor 1 μ 50V (LN)	R687	OB01889A	Carbon Resistor 100K ERD-25T J
R509	OB09300A	Metal Film Resistor 150K SN14K2E F	C501	OB01402A	Electrolytic Capacitor 4.7 μ 25V	C554	OB05843A	Mylar Capacitor 0.012 μ 50V J	R688	OB05622A	Carbon Resistor 2.2K ERD-25T J
R510	OB01888A	Carbon Resistor 10K ERD-25T J	C502	OB05550A	Mylar Capacitor 1000P 50V J	C555	OB09327A	Electrolytic Capacitor 0.33 μ 50V (LN)	C557	OB09302A	Mica Capacitor 100P 50V J
R511,512	OB01889A	Carbon Resistor 100K ERD-25T J	C503,504	OB01396A	Electrolytic Capacitor 3.3 μ 25V	C556	OB09370A	Ceramic Capacitor 33P 50V J	C558	OB05659A	Mylar Capacitor 5600P 50V J
513			C505	OB01502A	Electrolytic Capacitor 330 μ 16V					-- Miscellaneous --	
	-- Counter Pulse --			-- Mute --			-- RAMM Mode --				
Q523,524	OB01872A	Transistor 2SC945 (L)	IC503	OB06219A	IC μ PD4081BC	IC505-509	OB06124B	IC RC4558D (5 pcs.)		OB07912A	Main Logic P.C.B.
D517,518	OB06181A	Silicon Diode 1SS53	Q517,518	OB01872A	Transistor 2SC945 (L)	IC510,511	OB06178A	IC μ PD4011BC		OB06233A	Zener Diode 10V RD10EB3
R575,576	OB01888A	Carbon Resistor 10K ERD-25T J	Q519,520	OB06013A	Transistor 2SA733	512			ZD523	OB06181A	Silicon Diode 1SS53
R577,578	OB01684A	Carbon Resistor 470K ERD-25T J	521			Q530,531	OB01872A	Transistor 2SC945 (L)	D505,524		
C511,512	OB01405A	Electrolytic Capacitor 1 μ 50V	D512-516	OB06181A	Silicon Diode 1SS53 (5 pcs.)	534			525,540		
	-- Shut-off --		R558,559	OB01889A	Carbon Resistor 100K ERD-25T J	Q532,533	OB06129A	FET 2SK117 (Y)	541,542		
Q525,526	OB01872A	Transistor 2SC945 (L)	570,571			D526-534	OB06181A	Silicon Diode 1SS53 (9 pcs.)	R530	OB05622A	Carbon Resistor 2.2K ERD-25T J
527,528			573			VR506	OB07236A	Semi-fixed Volume 10K	R591	OB01888A	Carbon Resistor 10K ERD-25T J
D519,520	OB06181A	Silicon Diode 1SS53	R560,561	OB01684A	Carbon Resistor 470K ERD-25T J	R593,594	OB05640A	Carbon Resistor 180K ERD-25T J	R592	OB05924A	Fail Safe Type Resistor 68 RDF-25S J
521,522			R562	OB05615A	Carbon Resistor 22K ERD-25T J	699			R681,682	OB05671A	Carbon Resistor 2.2M ERD-25T J
R579	OB05668A	Carbon Resistor 82K ERD-25T J	R563	OB01888A	Carbon Resistor 10K ERD-25T J	R595,600	OB05671A	Carbon Resistor 2.2M ERD-25T J	683		
R580	OB05509A	Carbon Resistor 33K ERD-25T J	R564,565	OB05641A	Carbon Resistor 47K ERD-25T J	606,695			R690	OB01889A	Carbon Resistor 100K ERD-25T J
R581,585	OB01888A	Carbon Resistor 10K ERD-25T J	R567	OB01857A	Carbon Resistor 1K ERD-25T J	R596	OB01857A	Carbon Resistor 1K ERD-25T J	R693	OB09216A	Fail Safe Type Resistor 10 RDF-25S J
586			R568	OB01887A	Carbon Resistor 5.6K ERD-25T J	R599,607	OB05776A	Carbon Resistor 1M ERD-25T J	C513,514	OB01412A	Electrolytic Capacitor 10 μ 16V
R582	OB01857A	Carbon Resistor 1K ERD-25T J	R569	OB05627A	Carbon Resistor 330K ERD-25T J	608,625			515		
R583	OB05671A	Carbon Resistor 2.2M ERD-25T J	R572	OB05509A	Carbon Resistor 33K ERD-25T J	626,629			C559,560	OB05583A	Mylar Capacitor 0.033 μ 50V J
R584,587	OB01889A	Carbon Resistor 100K ERD-25T J	R574	OB05671A	Carbon Resistor 2.2M ERD-25T J	630,636			561		
588,589			C509	OB01405A	Electrolytic Capacitor 1 μ 50V	R601,602	OB01889A	Carbon Resistor 100K ERD-25T J	CN18	OB08257A	15P-T Post
591			C510	OB01780A	Mylar Capacitor 0.1 μ 50V J	604,615			CN19	OB08183A	5P-T Post
C506	OB05813A	Mylar Capacitor 0.056 μ 50V J		-- A3 Music --		616,634			CN20	OB08646A	10P-T Post
C507	OB01405A	Electrolytic Capacitor 1 μ 50V	IC514,516	OB06216A	IC μ PC4556C	637			CN21	OB08653A	3P-T Post
C508	OB01389A	Electrolytic Capacitor 4.7 μ 25V	IC517	OB06213A	IC TC4013BP	R603	OB05743A	Carbon Resistor 27K ERD-25T J	CN22,70	OB08656A	2P-T Post
	-- Motor Control --		IC518	OB06286A	IC TC4082BP	R605	OB05641A	Carbon Resistor 47K ERD-25T J	CN29	OB08506A	13P-T Post
IC504	OB06124B	IC RC4558D	IC519	OB06124B	IC RC4558D	R609	OB05626A	Carbon Resistor 150K ERD-25T J	CN30,32	OB08178A	12P-T Post
Q510,511	OB01872A	Transistor 2SC945 (L)	IC520	OB06217A	IC RC4560D	R610	OB05622A	Carbon Resistor 2.2K ERD-25T J	CN31,33	OB08334A	8P-T Post
512			Q534	OB06013A	Transistor 2SA733	R611,612	OB05615A	Carbon Resistor 22K ERD-25T J	CN34	OB08182A	6P-T Post
			Q535,536	OB01872A	Transistor 2SC945 (L)	635			CN35	OB08185A	3P-T Post
			Q537	OB06066A	Transistor 2SD471	R613,614	OB05868A	Carbon Resistor 680K ERD-25T J	CN54	OB08787B	3P-H Connector
			Q538	OB06069A	Transistor 2SB564	619,620			CN56	OB08788C	4P-H Connector
			D536,537	OB06181A	Silicon Diode 1SS53	621,622			CN57	OB08789B	6P-H Connector
			538,539			R617,618	OB01846A	Carbon Resistor 4.7K ERD-25T J	CN58	OB08790C	8P-H Connector
						R623,624	OB05625A	Carbon Resistor 220K ERD-25T J			
						R627,628	OB09263A	Carbon Resistor 12K ERD-25T J			

7.28. Sub Logic P.C.B. Ass'y

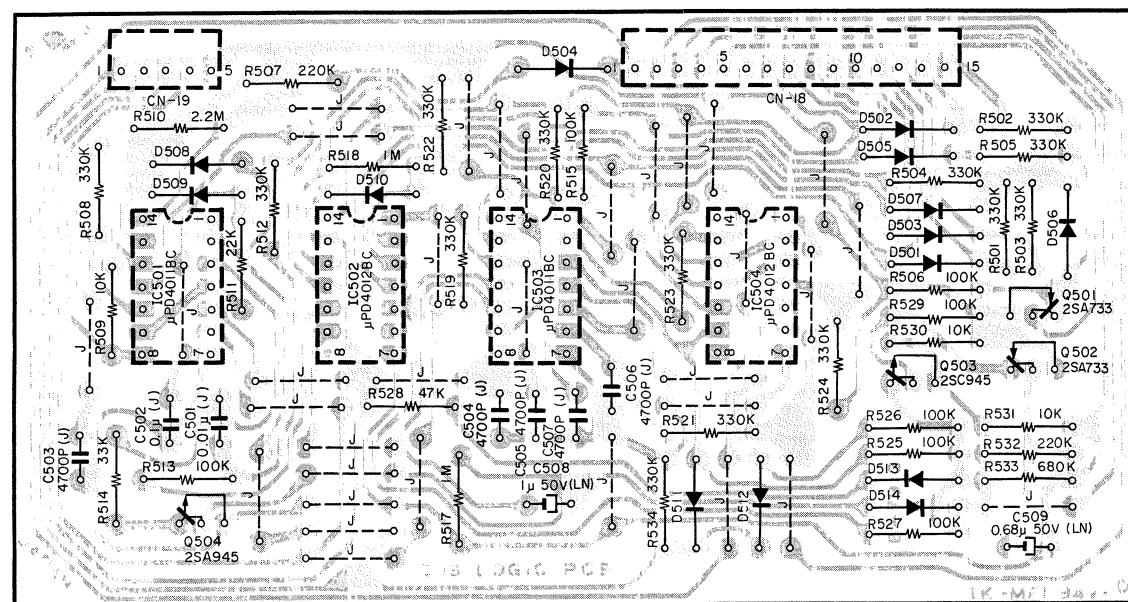


Fig. 7.28 Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description
	BA04279A	Sub Logic P.C.B. Ass'y
	0B07913A	Sub Logic P.C.B.
IC501,503	0B06178A	IC μ PD4011BC
IC502,504	0B06263A	IC μ PD4012BC
Q501,502	0B06013A	Transistor 2SA733
Q503,504	0B06100A	Transistor 2SC945 (A)
D501-514	0B06181A	Silicon Diode 1SS53 (14 pcs.)
R501-505	0B05627A	Carbon Resistor 330K ERD-25T J (15 pcs.)
508,512		
516		
519-524		
534		
R506,513	0B01889A	Carbon Resistor 100K ERD-25T J
515,525		
526,527		
529		
R507,532	0B05625A	Carbon Resistor 220K ERD-25T J
R509,530	0B01888A	Carbon Resistor 10K ERD-25T J
531		
R510	0B05671A	Carbon Resistor 2.2M ERD-25T J
R511	0B05615A	Carbon Resistor 22K ERD-25T J
R514	0B05509A	Carbon Resistor 33K ERD-25T J
R517,518	0B05776A	Carbon Resistor 1M ERD-25T J
R528	0B05641A	Carbon Resistor 47K ERD-25T J
R533	0B05868A	Carbon Resistor 680K ERD-25T J
C501	0B05681A	Mylar Capacitor 0.01 μ 50V J
C502	0B01780A	Mylar Capacitor 0.1 μ 50V J
C503,504	0B05652A	Mylar Capacitor 4700P 50V J
505,506		
507		
C508	0B09223A	Electrolytic Capacitor 1 μ 50V (LN)
C509	0B09395A	Electrolytic Capacitor 0.68 μ 50V (LN)
CN18	0B08806A	15P-S Connector
CN19	0B08727A	5P-S Connector

7.29. Auto Cal. A P.C.B. Ass'y

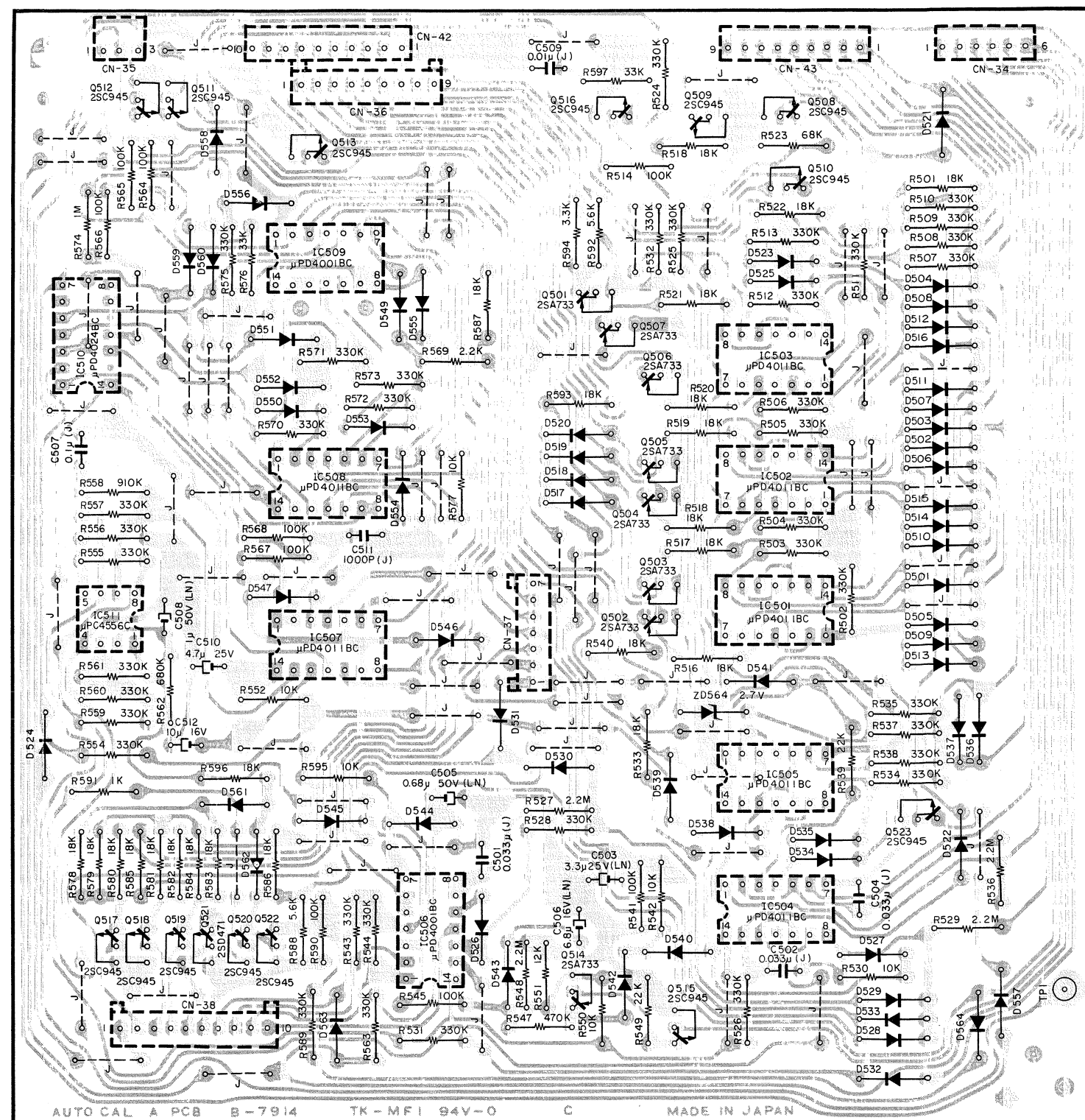


Fig. 7.29.1 2nd Version Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04337A	Auto Cal. A P.C.B. Ass'y 2nd Version	C509	OB05681A	Mylar Capacitor 0.01μ 50V J
			C510	OB01402A	Electrolytic Capacitor 4.7μ 25V
	OB07914C	Auto Cal. A P.C.B.	C511	OB05550A	Mylar Capacitor 1000P 50V J
IC501-505	OB06178A	IC μPD4011BC (7 pcs.)	C512	OB01412A	Electrolytic Capacitor 10μ 16V
507,508			CN34	OB08728A	6P-S Connector
IC506,509	OB06143A	IC μPD4001BC	CN35	OB08812A	3P-S Connector
IC510	OB06281A	IC μPD4024BC	CN36	OB08808A	9P-T Connector
IC511	OB06216A	IC μPC4556C	CN37	OB08807A	7P-T Connector
Q501-507	OB06013A	Transistor 2SA733 (8 pcs.)	CN38	OB08809A	10P-T Connector
514			CN42	OB08286A	10P-S Post
Q508-513	OB06100A	Transistor 2SC945 (A) (14 pcs.)	CN43	OB08810A	9P-S Post
515-520					
522,523					
Q521	OB06066A	Transistor 2SD471			
ZD564	OB06191A	Zener Diode 2.7V 2.7EB			
D501-547	OB06181A	Silicon Diode 1SS53 (63 pcs.)			
549-564					
R501	OB05560A	Carbon Resistor 18K ERD-25T J (23 pcs.)			
515-522					
533,540					
578-587					
593,596					
R502-513	OB05627A	Carbon Resistor 330K ERD-25T J (38 pcs.)			
524-526					
528,531					
532,534					
535,537					
538,543					
544					
554-557					
559-561					
563					
570-573					
575,589					
R514,541	OB01889A	Carbon Resistor 100K ERD-25T J			
545,564					
565,566					
568,590					
R523	OB05692A	Carbon Resistor 68K ERD-25T J			
R527,529	OB05671A	Carbon Resistor 2.2M ERD-25T J			
536,548					
R530,542	OB01888A	Carbon Resistor 10K ERD-25T J			
550,552					
567,577					
595					
R539,549	OB05615A	Carbon Resistor 22K ERD-25T J			
R547	OB01684A	Carbon Resistor 470K ERD-25T J			
R551	OB09263A	Carbon Resistor 12K ERD-25T J			
R558	OB05960A	Carbon Resistor 910K ERD-25T J			
R562	OB05868A	Carbon Resistor 680K ERD-25T J			
R569	OB05622A	Carbon Resistor 2.2K ERD-25T J			
R574	OB05776A	Carbon Resistor 1M ERD-25T J			
R576,597	OB05509A	Carbon Resistor 33K ERD-25T J			
R588,592	OB01887A	Carbon Resistor 5.6K ERD-25T J			
R591	OB01857A	Carbon Resistor 1K ERD-25T J			
R594	OB01681A	Carbon Resistor 3.3K ERD-25T J			
C501,502	OB05583A	Mylar Capacitor 0.033μ 50V J			
504					
C503	OB09324A	Electrolytic Capacitor 3.3μ 25V (LN)			
C505	OB09395A	Electrolytic Capacitor 0.68μ 50V (LN)			
C506	OB09219A	Electrolytic Capacitor 6.8μ 16V (LN)			
C507	OB01780A	Mylar Capacitor 0.1μ 50V J			
C508	OB09223A	Electrolytic Capacitor 1μ 50V (LN)			

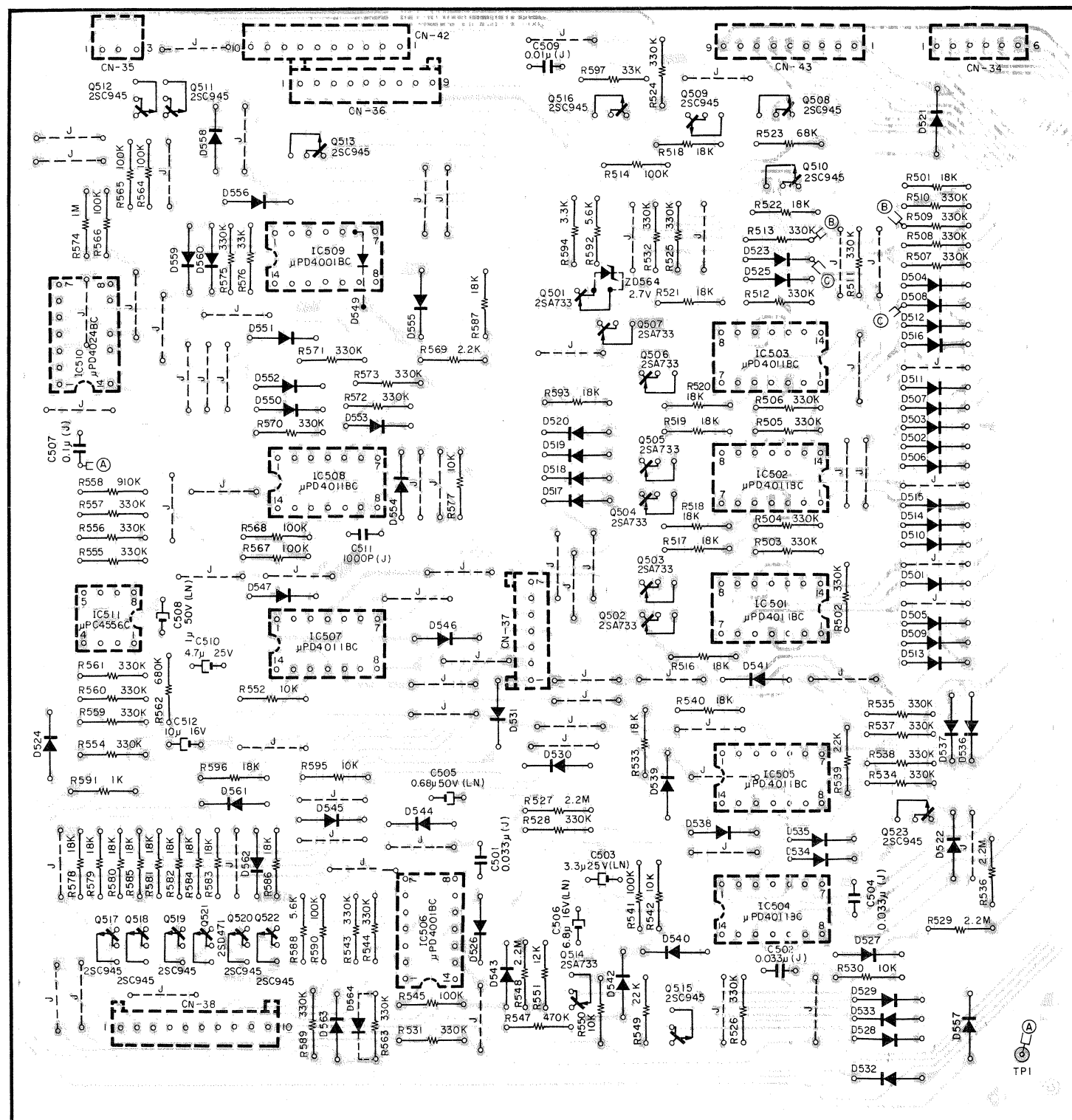


Fig. 7.29.2 1st Version

Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description
	BA04337A	Auto Cal. A P.C.B. Ass'y 1st Version
IC501-505 507,508	0B07914A	Auto Cal. A P.C.B.
IC506,509	0B06178A	IC μ PD4011BC (7 pcs.)
IC510	0B06143A	IC μ PD4001BC
IC511	0B06281A	IC μ PD4024BC
Q501-507 514	0B06216A	IC μ PC4556C
Q508-513 515-520 522,523	0B06013A	Transistor 2SA733 (8 pcs.)
Q521	0B06100A	Transistor 2SC945 (A) (14 pcs.)
ZD564	0B06066A	Transistor 2SD471
D501-547 549-564	0B06191A	Zener Diode 2.7V 2.7EB
R501 515-522 533,540 578-587 593,596	0B06181A	Silicon Diode 1SS53 (63 pcs.)
R502-513 524-526 528,531 532,534 535,537 538,543 544 554-557 559-561 563 570-573 575,589	0B05560A	Carbon Resistor 18K ERD-25T J (23 pcs.)
R514,541 545,564 565,566 568,590	0B05627A	Carbon Resistor 330K ERD-25T J (38 pcs.)
R523 R527,529 536,548	0B01889A	Carbon Resistor 100K ERD-25T J
R530,542 550,552 567,577 595	0B05692A	Carbon Resistor 68K ERD-25T J
R539,549	0B05671A	Carbon Resistor 2.2M ERD-25T J
R547	0B01888A	Carbon Resistor 10K ERD-25T J
R551	0B05615A	Carbon Resistor 22K ERD-25T J
R558	0B01684A	Carbon Resistor 470K ERD-25T J
R562	0B09263A	Carbon Resistor 12K ERD-25T J
R569	0B05960A	Carbon Resistor 910K ERD-25T J
R574	0B05868A	Carbon Resistor 680K ERD-25T J
R576,597	0B05622A	Carbon Resistor 2.2K ERD-25T J
R588,592	0B05776A	Carbon Resistor 1M ERD-25T J
R591	0B05509A	Carbon Resistor 33K ERD-25T J
R594	0B01887A	Carbon Resistor 5.6K ERD-25T J
C501,502 504	0B01857A	Carbon Resistor 1K ERD-25T J
C503	0B01681A	Carbon Resistor 3.3K ERD-25T J
C505	0B05583A	Mylar Capacitor 0.033 μ 50V J
C506	0B09324A	Electrolytic Capacitor 3.3 μ 25V (LN)
C507	0B09395A	Electrolytic Capacitor 0.68 μ 50V (LN)
C508	0B09219A	Electrolytic Capacitor 6.8 μ 16V (LN)
	0B01780A	Mylar Capacitor 0.1 μ 50V J
	0B09223A	Electrolytic Capacitor 1 μ 50V (LN)

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
C509	OB05681A	Mylar Capacitor 0.01μ 50V J		BA04338A	Auto Cal. B P.C.B. Ass'y
C510	OB01402A	Electrolytic Capacitor 4.7μ 25V			
C511	OB05550A	Mylar Capacitor 1000P 50V J		OB07915B	Auto Cal. B P.C.B.
C512	OB01412A	Electrolytic Capacitor 10μ 16V	IC501,502	OB06143A	IC μPD4001BC
CN34	OB08728A	6P-S Connector	IC503-506	OB06279A	IC MSM4516RS (4 pcs.)
CN35	OB08812A	3P-S Connector	IC507,508	OB06216A	IC μPC4556C
CN36	OB08808A	9P-T Connector	IC509-511	OB06278A	IC MSM4039RS (3 pcs.)
CN37	OB08807A	7P-T Connector	Q501-506	OB06100A	Transistor 2SC945(A)(14 pcs.)
CN38	OB08809A	10P-T Connector	510-517		
CN42	OB08286A	10P-S Post	Q507-509	OB06062A	Transistor 2SC1222(2)(3 pcs.)
CN43	OB08810A	9P-S Post	D501-533	OB06181A	Silicon Diode 1SS53 (33 pcs.)
			R501-511	OB01889A	Carbon Resistor 100K ERD-25T J (34 pcs.)
			520-524		
			528,537		
			538,546		
			549,550		
			567-575		
			597-599		
			R512-514	OB05671A	Carbon Resistor 2.2M ERD-25T J (10 pcs.)
			518,519		
			527		
			533-536		
			R515,516	OB05743A	Carbon Resistor 27K ERD-25T J
			517		
			R525,526	OB01888A	Carbon Resistor 10K ERD-25T J (9 pcs.)
			529-532		
			539-541		
			R542	OB09230A	Metal Film Resistor 1.5K SN14K2E F
			R543	OB09496A	Metal Film Resistor 68.1 SN14K2E F
			R544	OB09529A	Metal Film Resistor 6.8K SN14K2E F
			R545	OB09416A	Metal Film Resistor 976 SN14K2E F
			R547	OB05615A	Carbon Resistor 22K ERD-25T J
			R548	OB05698A	Carbon Resistor 1.5K ERD-25T J
			R551,552	OB09505A	Metal Film Resistor 1.1K SN14K2E F
			R553,554	OB01846A	Carbon Resistor 4.7K ERD-25T J
			R555,556	OB09498A	Metal Film Resistor 22.1K SN14K2E F
			R557,558	OB09497A	Metal Film Resistor 11.3K SN14K2E F
			R559,560	OB09500A	Metal Film Resistor 105K SN14K2E F
			R561,562	OB09501A	Metal Film Resistor 487K SN14K2E F
			R563,564	OB09502A	Metal Film Resistor 1M SN14K2E F
			R565,566	OB09478A	Metal Film Resistor 412K SN14K2E F
			C501	OB01412A	Electrolytic Capacitor 10μ 16V
			C502	OB05583A	Mylar Capacitor 0.033μ 50V J
			C503	OB05682A	Mylar Capacitor 0.068μ 50V J
			CN2	OB08792A	6P-H Connector
			CN31,33	OB08730A	8P-S Connector
			CN32	OB08732A	12P-S Connector
			CN36	OB08614A	9P-T Post
			CN37	OB08302A	7P-T Post
			CN38	OB08615A	10P-T Post
			CN39	OB08451A	7P-S Post
			CN71	OB08184A	3P-S Post

7.30. Auto Cal. B P.C.B. Ass'y

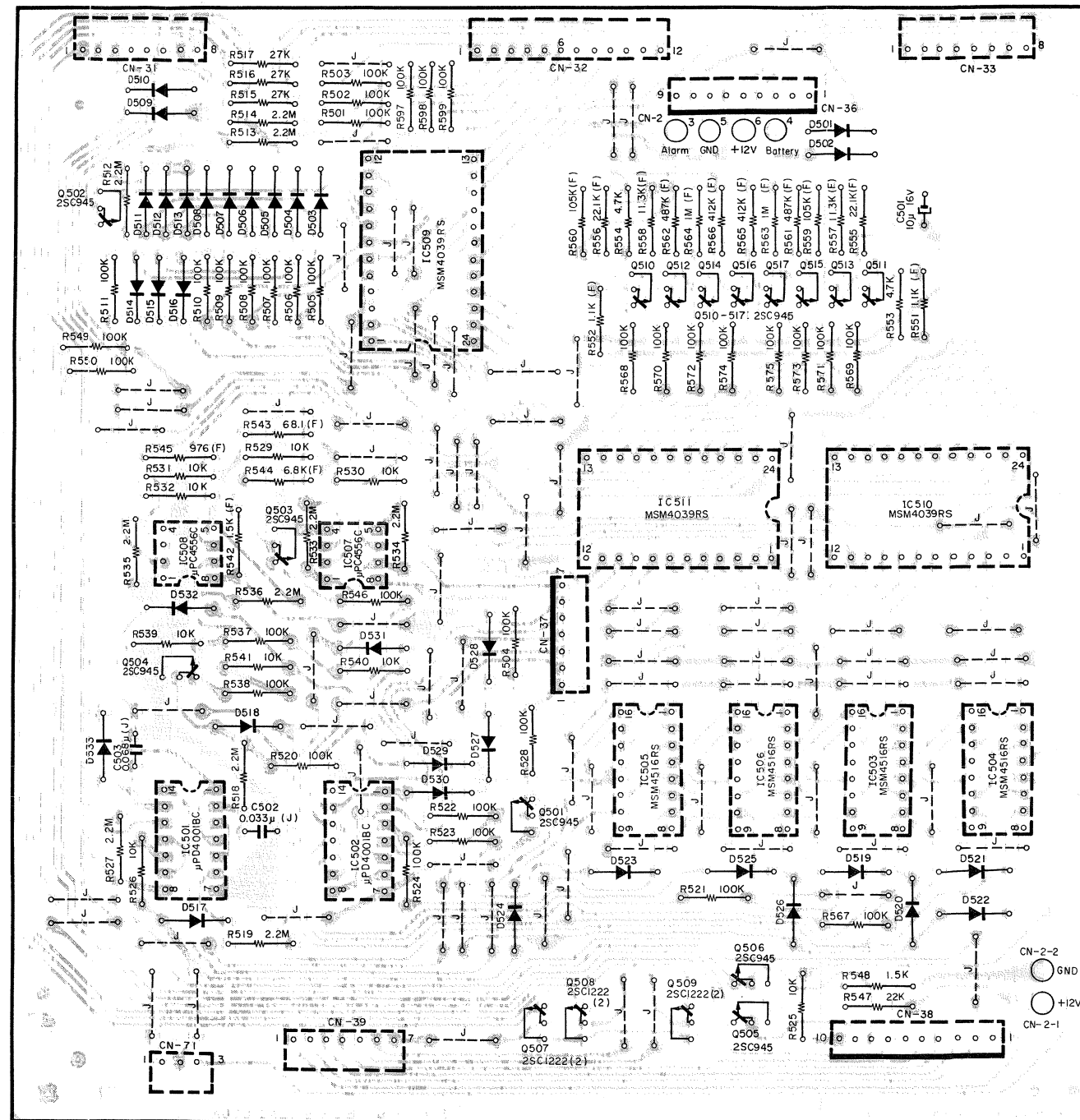


Fig. 7.30

Note: Diode is 1SS53 unless otherwise specified.

7.31. RAMM P.C.B. Ass'y

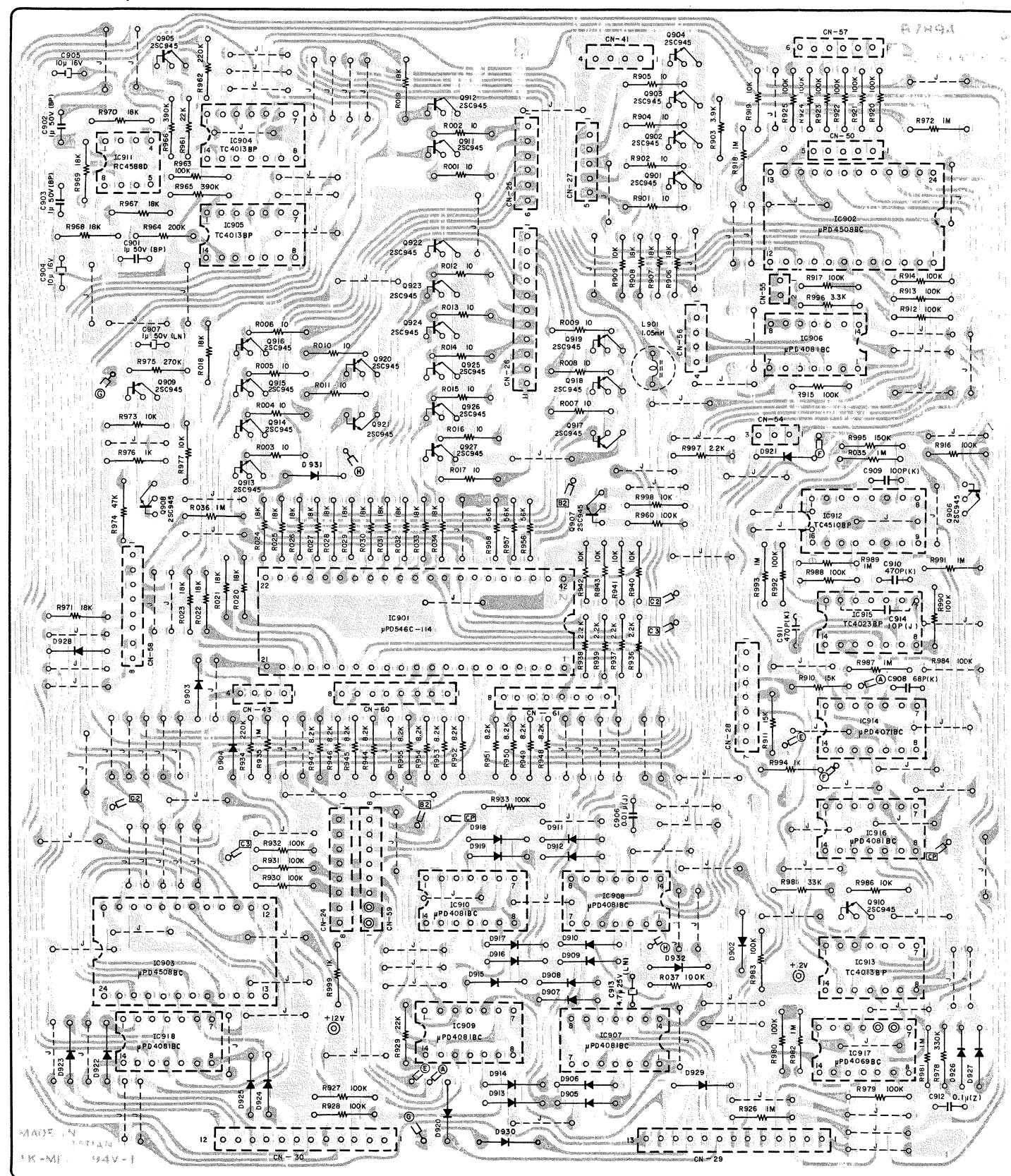


Fig. 7.31

Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description
	BA04334A	RAMM P.C.B. Ass'y
	OB07894D	RAMM P.C.B.
IC901	OB06254A	IC μ PD546C-114
IC902,903	OB06261A	IC μ PD4508BC
IC904,905 913	OB06213A	IC TC4013BP
IC906-910 916,917	OB06219A	IC μ PD4081BC (7 pcs.)
IC911	OB06124B	IC RC4558D
IC912	OB06212A	IC TC4510BP
IC914	OB06214A	IC μ PD4071BC
IC915	OB06224A	IC TC4023BP
IC918	OB06270A	IC μ PD4069BC
Q901-927	OB06100A	Transistor 2SC945 (A) (27 pcs.)
D902-932	OB06181A	Silicon Diode 1SS53 (31 pcs.)
L901	OB06636A	Inductor 1.05mH
R018-034 906-908 967-971	OB05560A	Carbon Resistor 18K ERD-25T J (25 pcs.)
R035,036 918,926 935,972 981,982 987,989 991,993	OB05776A	Carbon Resistor 1M ERD-25T J
R037 912-917 920-925 927,928 930-933 960,963 979,980 983,984 988,990 992	OB01889A	Carbon Resistor 100K ERD-25T J (28 pcs.)
R903	OB05675A	Carbon Resistor 3.9K ERD-25T J
R909,919 940-943 973,977 986,998	OB01888A	Carbon Resistor 10K ERD-25T J (10 pcs.)
R910,911	OB01683A	Carbon Resistor 15K ERD-25T J
R929,961	OB05615A	Carbon Resistor 22K ERD-25T J
R934,962	OB05625A	Carbon Resistor 220K ERD-25T J
R936-939 997	OB05622A	Carbon Resistor 2.2K ERD-25T J (5 pcs.)
R944-955	OB01856A	Carbon Resistor 8.2K ERD-25T J (12 pcs.)
R956,957 958	OB05508A	Carbon Resistor 56K ERD-25T J
R964	OB09392A	Carbon Resistor 200K ERD-25T J
R965,966	OB05676A	Carbon Resistor 390K ERD-25T J
R974	OB05641A	Carbon Resistor 47K ERD-25T J
R975	OB05620A	Carbon Resistor 270K ERD-25T J
R976,994 999	OB01857A	Carbon Resistor 1K ERD-25T J
R978	OB05627A	Carbon Resistor 330K ERD-25T J
R985	OB05509A	Carbon Resistor 33K ERD-25T J
R995	OB05626A	Carbon Resistor 150K ERD-25T J
R996	OB01681A	Carbon Resistor 3.3K ERD-25T J
C901,902 903	OB09187A	Electrolytic Capacitor 1 μ 50V (BP)
C904,905	OB01412A	Electrolytic Capacitor 10 μ 16V
C906	OB05681A	Mylar Capacitor 0.01 μ 50V J

Schematic Ref. No.	Part No.	Description
C907	OB09223A	Electrolytic Capacitor 1μ 50V (LN)
C908	OB09393A	Ceramic Capacitor 68P 50V J
C909	OB09282A	Ceramic Capacitor 100P 50V K
C910,911	OB09286A	Ceramic Capacitor 470P 50V K
C912	OB09292A	Ceramic Capacitor 0.1μ 50V Z
C913	OB09333A	Electrolytic Capacitor 4.7μ 25V (LN)
C914	OB09277A	Ceramic Capacitor 10P 50V J
CN24,58,59	OB08644A	8P-T Post
CN25,57	OB08642A	6P-T Post
CN26	OB08655A	11P-T Post
CN27	OB08724A	5P-T Post
CN28	OB08643A	7P-T Post
CN29	OB08732A	12P-S Connector
CN30	OB08805A	13P-S Connector
CN41,56	OB08654A	4P-T Post
CN43	OB08236A	4P-T Post
CN50	OB08183A	5P-T Post
CN54	OB08653A	3P-T Post
CN55	OB08656A	2P-T Post
CN60,61	OB08334A	8P-T Post
PL001-017 024-027 PL509-514	BA04270A	Lamp L P.C.B. Ass'y
	OB07922B	Lamp L P.C.B.
	OB08837A	Lamp 5V 50mA (21 pcs.)
	OB08721A	Lamp 12V 30mA (6 pcs.)
	OB08795B	6P-H Connector
	OB08796B	11P-H Connector
	OB08797B	5P-H Connector
	OB08794A	7P-H Connector
IC501 IC502 IC503 Q501 LED501 D502,503 504 R501,502 R503 R504 R505 R506-512	BA04275A	Counter P.C.B. Ass'y
	OB07910A	Counter P.C.B.
	OB06259A	IC MSM5512RS
	OB06211A	IC TC5022BP
	OB06258A	IC M54516P
	OB06100A	Transistor 2SC945 (A)
	OB06266A	LED TLR4125
	OB06181A	Silicon Diode 1SS53
	OB01888A	Carbon Resistor 10K ERD-25T J
	OB05668A	Carbon Resistor 82K ERD-25T J
	OB01889A	Carbon Resistor 100K ERD-25T J
	OB01846A	Carbon Resistor 4.7K ERD-25T J
	OB05936A	Carbon Resistor 10 ERD-25T J (7 pcs.)
	OB09283A	Ceramic Capacitor 220P 50V K
	OB05899A	Electrolytic Capacitor 220μ 10V
	OB08785A	7P-H Connector
SW902-906 CN24	BA04327A	Switch C P.C.B. Ass'y
	OB07918A	Switch C P.C.B.
	OB07219A	Switch AKC8S
	OB08800A	8P-H Connector

7.32. Lamp L P.C.B. Ass'y

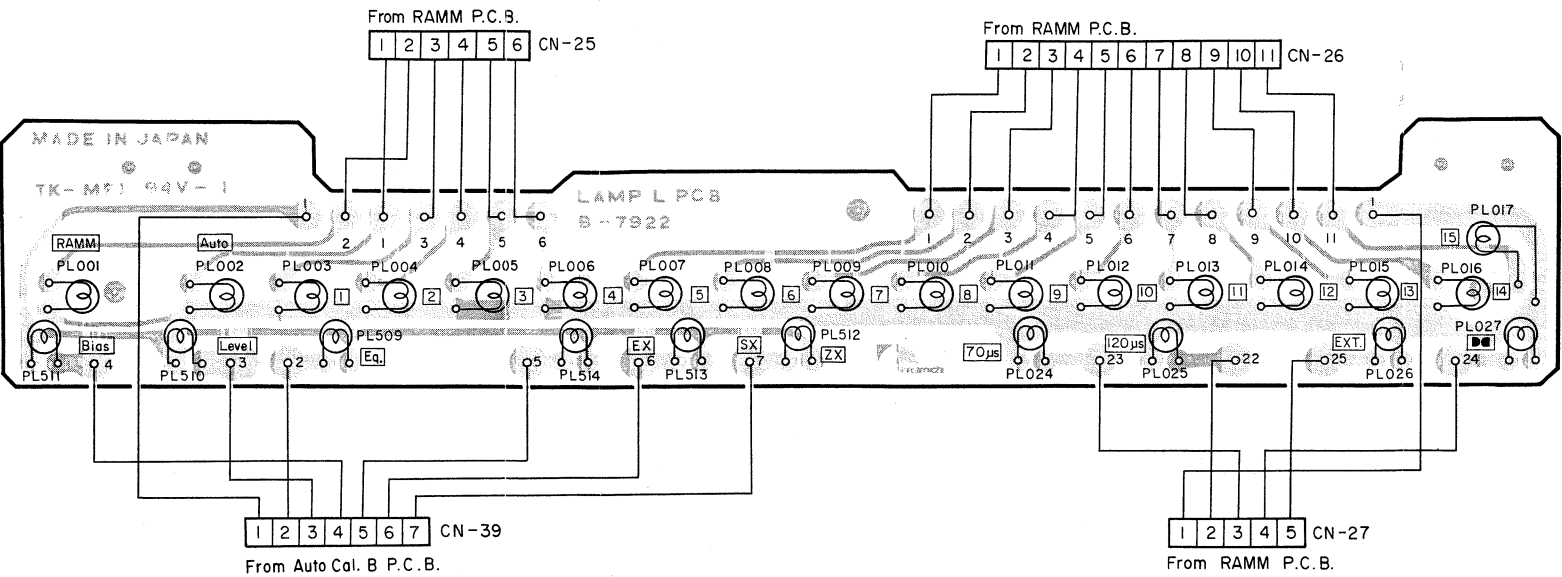


Fig. 7.32

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

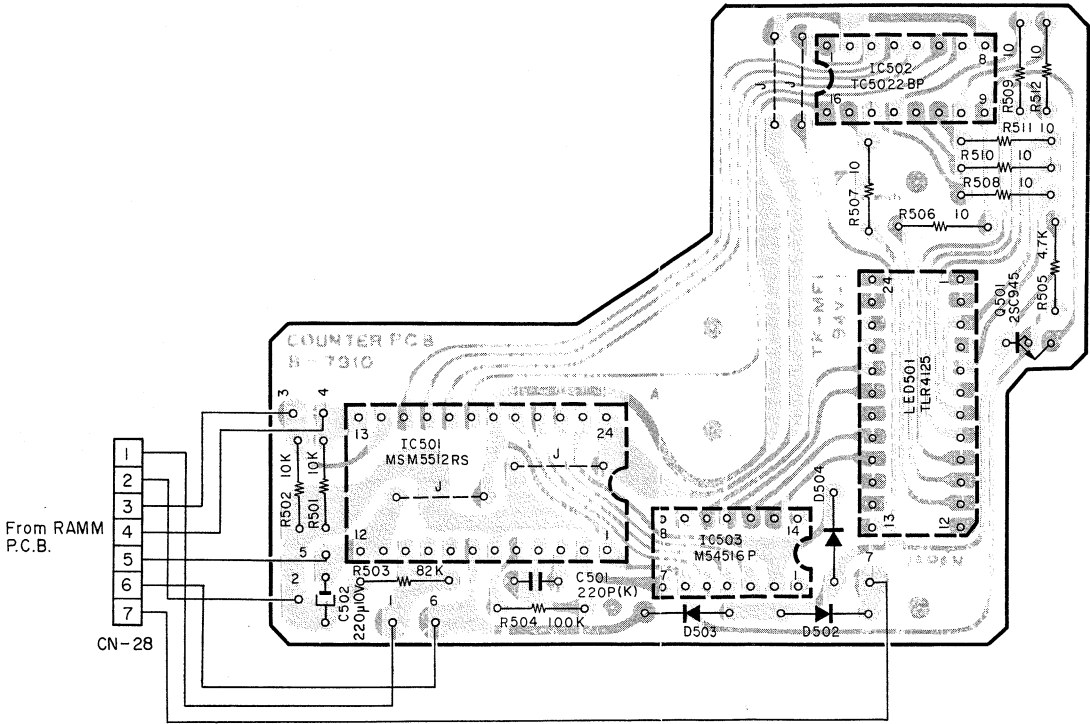


Fig. 7.33 Note: Diode is 1SS53 unless otherwise specified.

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

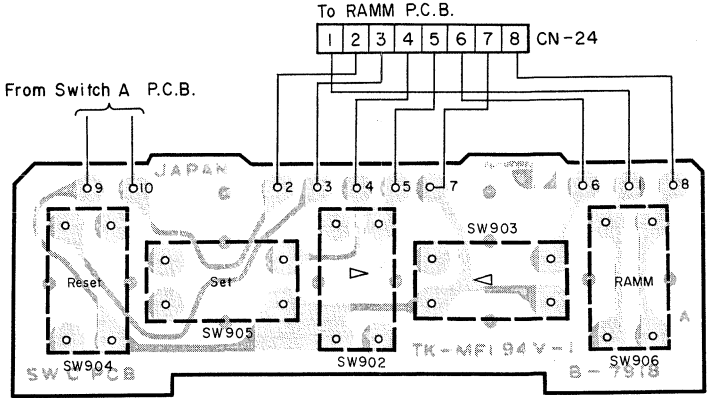


Fig. 7.34

7.35. Power Supply P.C.B. Ass'y

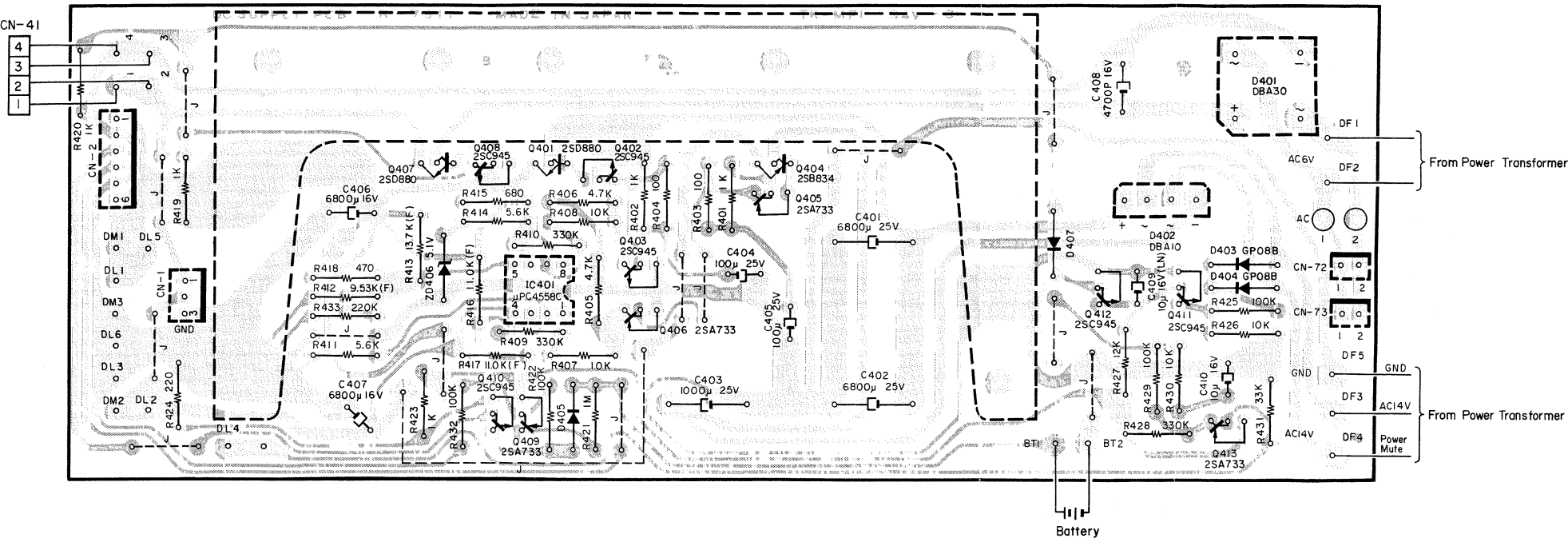


Fig. 7.35

Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description
	BA04276A	Power Supply P.C.B. Ass'y
IC401	0B07911B	Power Supply P.C.B.
Q401,407	0B06124B	IC μ PC4558C
Q402,403	0B06255A	Transistor 2SD880 (Y)
408,410	0B06100A	Transistor 2SC945 (A)
411,412		
Q404	0B06256A	Transistor 2SB834 (Y)
Q405,406	0B06013A	Transistor 2SA733
409,413		
ZD406	0B06230A	Zener Diode 5.1V RD5.1ER2
D401	0B06283A	Diode Bridge DBA30
D402	0B06282A	Diode Bridge DBA10
D403,404	0B06109A	Silicon Diode GP08B
D405,407	0B06181A	Silicon Diode 1SS53
R401,402	0B01857A	Carbon Resistor 1K ERD-25T J
419,420		
423		
R403,404	0B01679A	Carbon Resistor 100 ERD-25T J
R405,406	0B01846A	Carbon Resistor 4.7K ERD-25T J
R407,408	0B01888A	Carbon Resistor 10K ERD-25T J
430		
R409,410	0B05627A	Carbon Resistor 330K ERD-25T J
428		
R411,414	0B01887A	Carbon Resistor 5.6K ERD-25T J
R412	0B09522A	Metal Film Resistor 9.53K SN14K2E F
R413	0B09528A	Metal Film Resistor 13.7K SN14K2E F
R415	0B05794A	Carbon Resistor 680 ERD-25T J
R416,417	0B09504A	Metal Film Resistor 11.0K SN14K2E F
R418	0B01684A	Carbon Resistor 470K ERD-25T J
R421	0B05776A	Carbon Resistor 1M ERD-25T J
R422,425	0B01889A	Carbon Resistor 100K ERD-25T J
429,432		
R424	0B01933A	Carbon Resistor 220 ERD-25T J
R426	0B05560A	Carbon Resistor 18K ERD-25T J
R427	0B09263A	Carbon Resistor 12K ERD-25T J
R431	0B05509A	Carbon Resistor 33K ERD-25T J
R433	0B05625A	Carbon Resistor 220K ERD-25T J
C401,402	0B09374A	Electrolytic Capacitor 6800 μ 25V
C403	0B01870A	Electrolytic Capacitor 1000 μ 25V
C404,405	0B01272A	Electrolytic Capacitor 100 μ 25V
C406	0B09398A	Electrolytic Capacitor 6800 μ 16V
C407	0B01397A	Electrolytic Capacitor 1000 μ 16V
C408	0B09377A	Electrolytic Capacitor 4700 μ 16V
C409	0B09148A	Electrolytic Capacitor 10 μ 16V (LN)
C410	0B01412A	Electrolytic Capacitor 10 μ 16V
CN1	0B08653A	3P-T Post
CN2	0B08642A	6P-T Post
CN41	0B08786B	4P-H Connector
CN72,73	0B08656A	2P-T Post
	0B08759A	Heat Sink A117 (1 pce.)
	0B08680B	Heat Sink A (1 pce.)
	0E00507A	Nut Hex. M3 (4 pcs.)
	0E00607A	Screw M3x8 Philips Pan Head (3A) (4 pcs.)
	0E00608A	Screw M3x10 Philips Pan Head (3A) (3 pcs.)
	0E00610A	Screw M3x12 Philips Pan Head (3A) (1 pce.)
	0B08601A	Transistor Mica (3 pcs.)
	0B08602A	Transistor Bushing (3 pcs.)
	0J04311A	Power Supply Fiber (1 pce.)

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

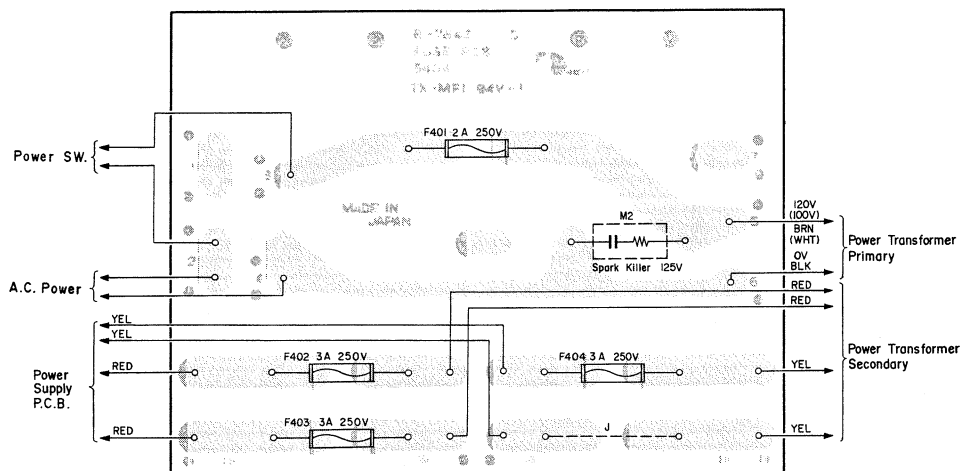


Fig. 7.36.1 U.S.A., Canada & Japan

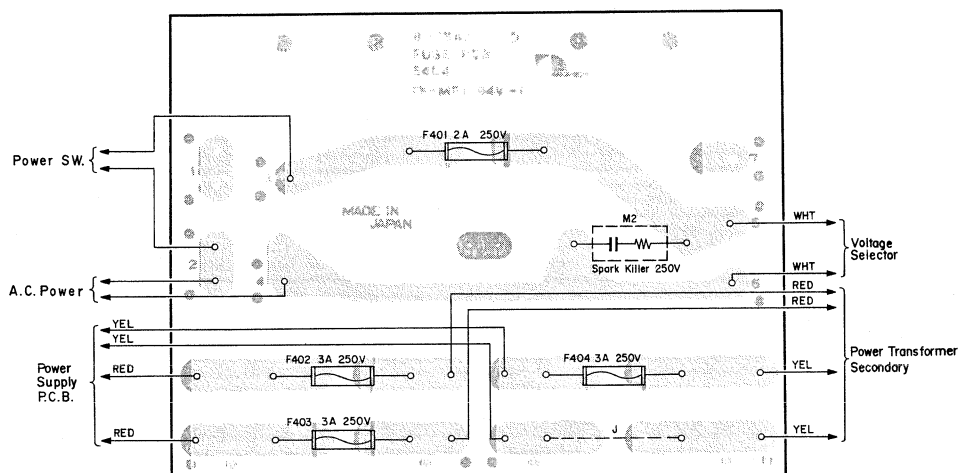


Fig. 7.36.2 Others

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
F401 F402,403 404	BA04260A	Fuse P.C.B. Ass'y (U.S.A. & Canada)	F401 F402,403 404	0B08363A	Spark Killer 125V (1 pce.)
	0B07842D	Fuse P.C.B.		0M03937A	Fuse Label 2A 250V (1 pce.)
	0B08525A	Fuse 2A 250V		0M04187A	Fuse Label 3A 250V (2 pcs.)
	0B08369A	Fuse 3A 250V		0E00752A	Eyelet 2x3 (6 pcs.)
	0B08342A	Spark Killer 125V (1 pce.)		BA04369A	Fuse P.C.B. Ass'y (Others)
	0M03937A	Fuse Label 2A 250V (1 pce.)		0B07842D	Fuse P.C.B.
	0M04187A	Fuse Label 3A 250V (2 pcs.)		0B08525A	Fuse 2A 250V
	0E00752A	Eyelet 2x3 (6 pcs.)		0B08369A	Fuse 3A 250V
F401 F402,403 404	BA04261A	Fuse P.C.B. Ass'y (Japan)	F401 F402,403 404	0B08240A	Spark Killer (1 pce.)
	0B07842D	Fuse P.C.B.		0B03937A	Fuse Label 2A 250V (1 pce.)
	0B08854A	Fuse 2A 250V		0M04187A	Fuse Label 3A 250V (2 pcs.)
	0B08781A	Fuse 3A 250V		0E00752A	Eyelet 2x3 (6 pcs.)

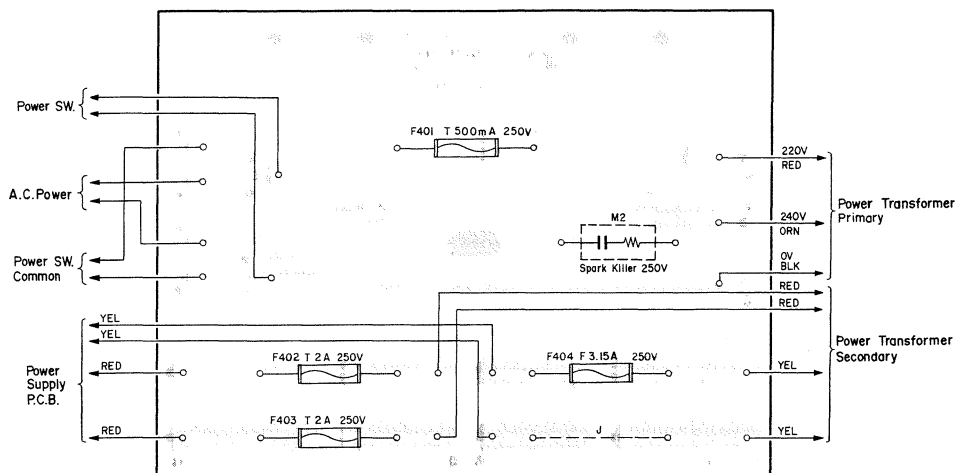


Fig. 7.36.3 UK & Australia

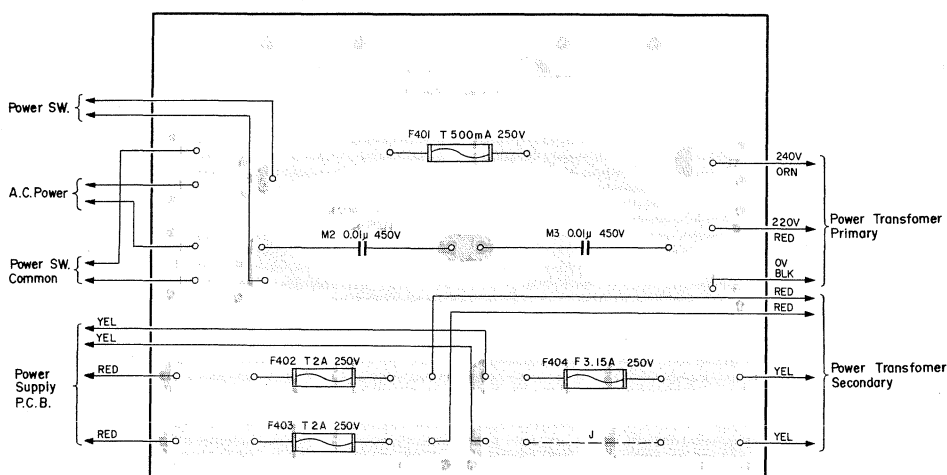


Fig. 7.36.4 220V Class 2

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
F401 F402,403 F404	BA04263A	Fuse P.C.B. Ass'y (UK & Australia)	F401 F402,403 F404	BA04262A	Fuse P.C.B. Ass'y (220V Class 2)
	0B07842D	Fuse P.C.B.		0B07842D	Fuse P.C.B.
	0B08457A	Fuse T 500mA 250V		0B08457A	Fuse T 500mA 250V
	0B08853A	Fuse T 2A 250V		0B08853A	Fuse T 2A 250V
	0B08230U	Fuse F 3.15A 250V		0B08230U	Fuse F 3.15A 250V
	0B08240A	Spark Killer AC250V (1 pce.)		0B08445A	Spark Killer 450V (2 pcs.)
	0B04254A	Fuse Label F 3.15A 250V (1 pce.)		0M04254A	Fuse Label F 3.15A 250V (1 pce.)
	0B04255A	Fuse Label T 2A 250Vx2 (1 pce.)		0M04255A	Fuse Label T 2A 250Vx2 (1 pce.)
	0M04096C	Fuse Label T 500mA 250V (1 pce.)		0B08349A	Fuse Clip (8 pcs.)
	0B08349A	Fuse Clip (8 pcs.)		0E00752A	Eyelet 2x3 (6 pcs.)
	0E00752A	Eyelet 2x3 (6 pcs.)			

8. MECHANISM ASS'Y AND PARTS LIST

8.1. Synthesis

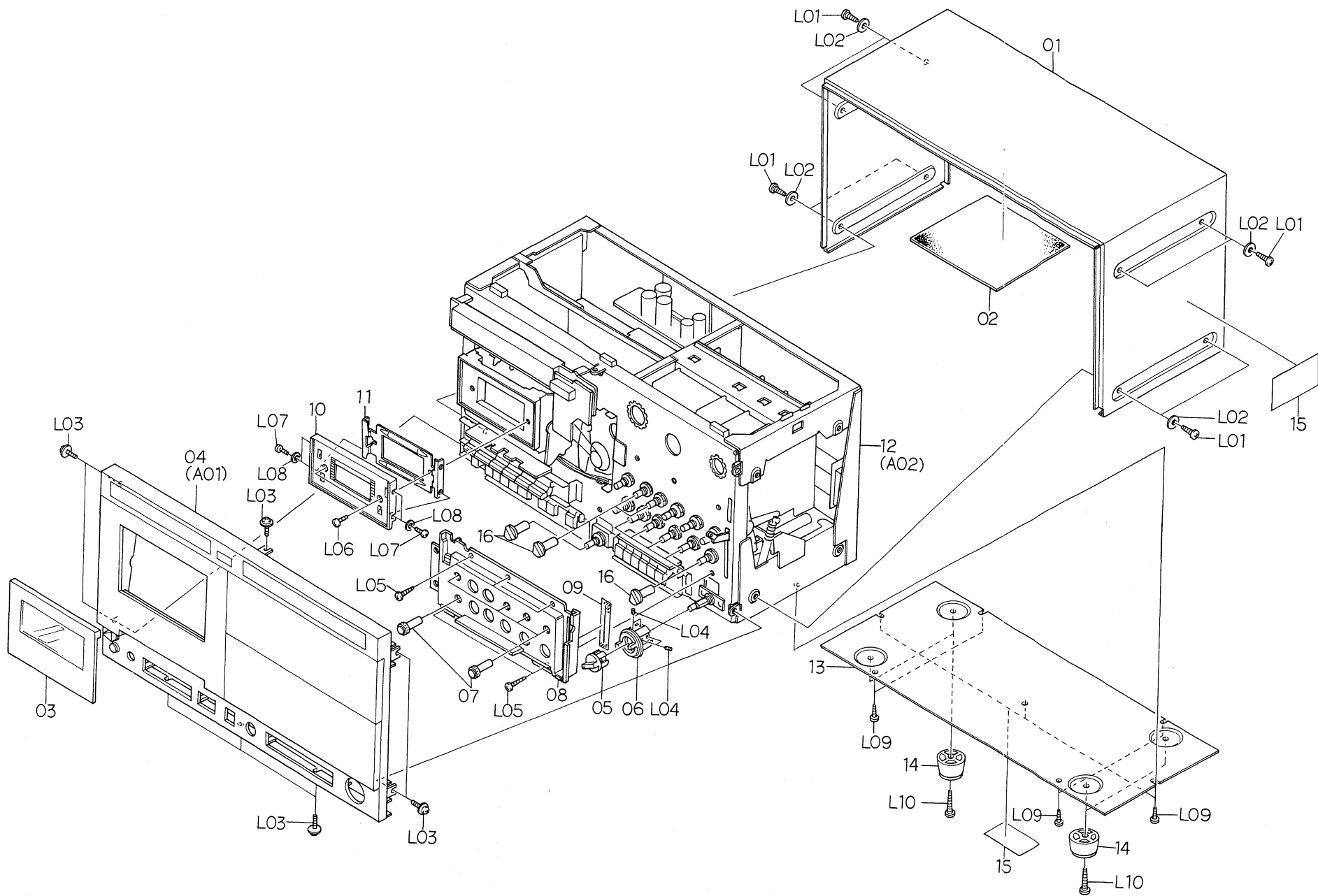


Fig. 8.1

Schematic Ref. No.	Part No.	Description	Q'ty
		Synthesis (U.S A. & Canada) Synthesis (Japan) Synthesis (220V Class 2) Synthesis (UK) Synthesis (Australia) Synthesis (Others) Serial No.: A11801001—	
01	0H03902A	Top Cover	1
02	0J04194A	Absorber Rubber	1
03	HA04048A	Cassette Case Cover Ass'y	1
04	HA04046A	Front Panel Ass'y	1
05	HA04063B	Volume Knob R Ass'y	1
06	HA04064B	Volume Knob L Ass'y	1
07	0H03891A	Volume Knob	5
08	HA04062A	Control Panel Ass'y	1
09	0J04231B	Damper Himelon	1
10	0H03914A	Cassette Case Escutcheon	1
11	0J04254A	Cassette Case Plate	1
12	JA03742A	Chassis Ass'y (U.S.A. & Canada)	1
	JA03743A	Chassis Ass'y (Japan)	1
	JA03745A	Chassis Ass'y (220V Class 2)	1
	JA03746A	Chassis Ass'y (UK)	1
	JA03747A	Chassis Ass'y (Australia)	1
	JA03744A	Chassis Ass'y (Others)	1
13	0H03905A	Bottom Cover	1
14	0J03825A	Leg S	4
15	0M04101A	Caution Label	2
16	0H03890B	Switch Knob	8
—	0M03458B	PASS Label (U.S.A., Canada, 220V Class 2 & Others)	1
—	0M03458A	PASS Label (Japan, UK & Australia)	1
L01	0E00915A	BT Screw M4x8 Philips Binding Head (Black Chromate)	8
L02	0E00736A	Washer 4mm (Black Chromate)	8
L03	0E00943A	Screw M3x8 Philips Pan Head Polywave	8
L04	0E00785A	Screw M3x4 Cup Point	4
L05	0E00868A	BT Screw M3x8 Philips Binding Head	5
L06	0E00593A	Screw M3x6 Philips Binding Head	2
L07	0E00945A	Screw M2.6x4 Philips Pan Head (Black Chromate)	4
L08	0E00651A	Washer 2.6mm	4
L09	0E00857A	BT Screw M3x6 Philips Binding Head	7
L10	0E00852A	BT Screw M4x12 Philips Binding Head	4

8.2. Front Panel Ass'y (A01)

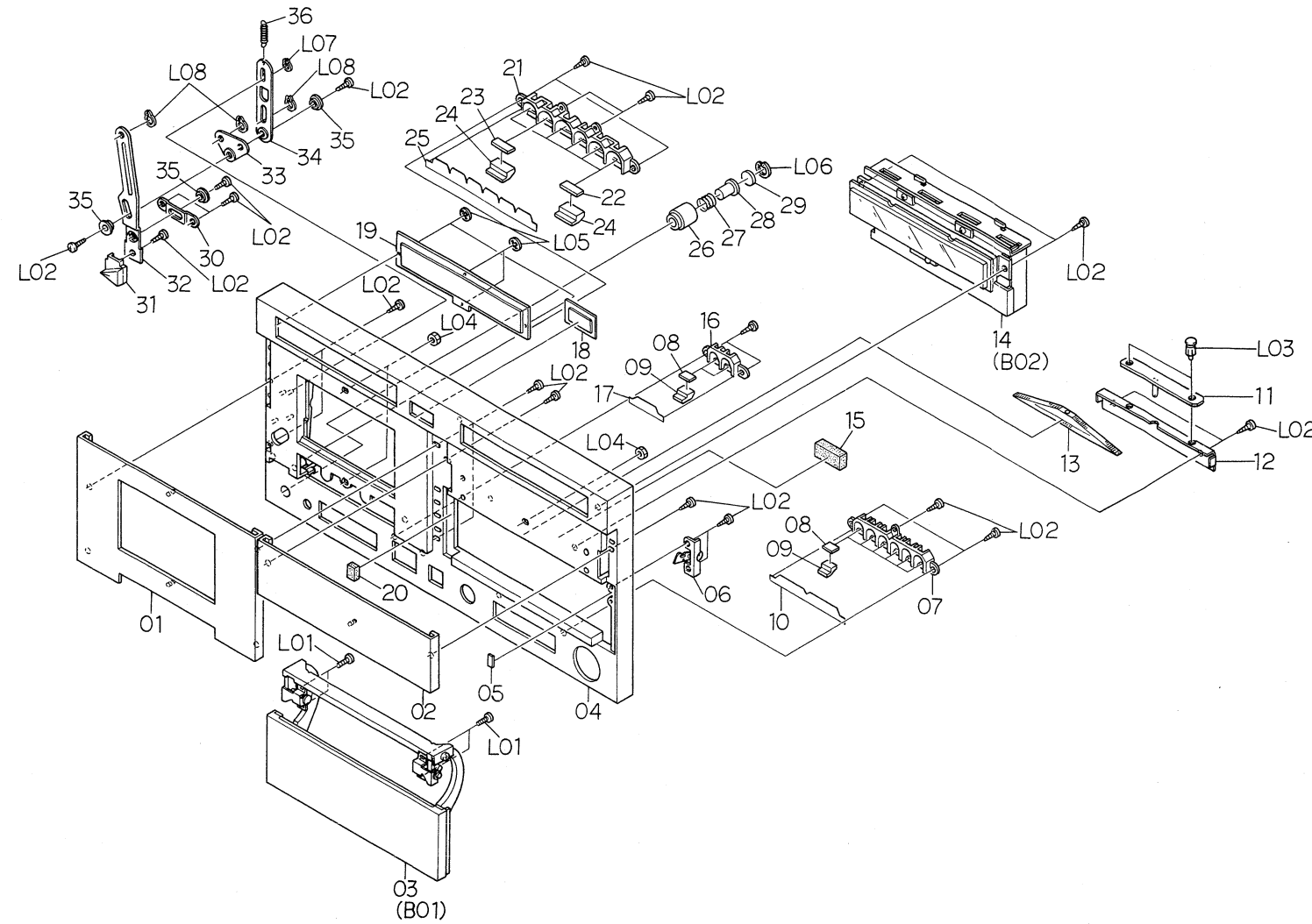


Fig. 8.2

[illegible]

Schematic Ref. No.	Part No.	Description	Q'ty
A02	JA03742A	Chassis Ass'y (U.S.A. & Canada)	1
	JA03743A	Chassis Ass'y (Japan)	1
	JA03745A	Chassis Ass'y (220V Class 2)	1
	JA03746A	Chassis Ass'y (UK)	1
	JA03747A	Chassis Ass'y (Australia)	1
	JA03744A	Chassis Ass'y (Others)	
		Serial No.: A11801001 —	
01	JA03750A	Front Chassis Ass'y (U.S.A. & Canada)	1
	JA03751A	Front Chassis Ass'y (Japan)	1
	JA03752A	Front Chassis Ass'y (220V Class 2, UK, Australia & Others)	1
02	CA08252A	Mechanism Ass'y N-700ZXL	1
03	BA04266A	Line Amp. P.C.B. Ass'y	1
04	BA04293A	MIC VR & Switch P.C.B. Ass'y	1
05	BA04289A	MIC & Meter Amp. P.C.B. Ass'y	1
06	QJ04277A	P.C.B. Stopper	1
07	BA04281A	Mother P.C.B. Ass'y	1
08	BA04278A	Main Logic P.C.B. Ass'y	1
09	BA04279A	Sub Logic P.C.B. Ass'y	1
10	QJ04186A	P.C.B. Holder C	1
11	QJ04276A	Insulator	1
12	BA04334A	RAMM P.C.B. Ass'y	1
13	QJ04358A	P.C.B. Holder E	1
14	QJ04361A	P.C.B. Cushion E	2
15	BA04337A	Auto Cal. A P.C.B. Ass'y	1
16	QJ04191B	P.C.B. Spacer	4
17	BA04338A	Auto Cal. B P.C.B. Ass'y	1
18	QJ04359A	P.C.B. Holder F	1
19	QJ04190B	P.C.B. Cushion A	2
20	BA04302A	Oscillator P.C.B. Ass'y	1
21	BA04296A	Record Eq. Amp. P.C.B. Ass'y	1
22	BA04235A	Playback Amp. & Dolby NR P.C.B. Ass'y	1
23	BA04236A	Record Dolby NR P.C.B. Ass'y	1
24	HA04053A	Rear Panel Ass'y (U.S.A. & Canada)	1
	HA04054A	Rear Panel Ass'y (Japan)	1
	HA04056A	Rear Panel Ass'y (220V Class 2)	1
	HA04057A	Rear Panel Ass'y (UK)	1
	HA04058A	Rear Panel Ass'y (Australia)	1
	HA04055A	Rear Panel Ass'y (Others)	1
25	QJ04184B	Chassis Bracket L	1
26	QJ04181A	Side Chassis L	1
27	QJ04183B	Center Chassis	1
28	QJ04278B	Cushion	7
29	BA04301A	Connector P.C.B. Ass'y	1
30	QJ04185B	Chassis Bracket R	1
31	QJ04182A	Side Chassis R	1
32	JA03753A	Pneumatic Damper Ass'y	1
33	QJ04238A	Damper Collar	1
34	QJ04284A	Damper Sleeve	1
35	QJ04189A	Spring	1
36	QJ04270A	Spring Hook	1
37	OM04182A	Amp. No. Seal	1
38	QJ04363A	P.C.B. Cushion G	1
39	QJ04360A	P.C.B. Holder G	1
L01	0E00944A	BT Screw M4x1 5 Philips Binding Head	3
L02	0E00924A	BT Screw M4x1 6 Philips Binding Head (Black Chromate)	1

Schematic Ref. No.	Part No.	Description	Q'ty
L03	0E00857A	BT Screw M3x6 Philips Binding Head	33
L04	—	Switch Nut	(8)
L05	—	Switch Washer	(8)
L06	—	Volume Nut	(5)
L07	—	Volume Washer	(5)
L08	0E00157A	Washer 3mm (Plastics)	6
L09	0E00612A	Screw M3x6 Philips Pan Head (2A)	4
L10	0E00860A	BT Screw M3x6 Philips Binding Head (Black Chromate)	2
L11	0E00920A	Screw M3x6 Philips Pan Head Polywave	2
L12	0E00946A	Washer 5mm	1
L13	0E00607A	Screw M3x8 Philips Pan Head (3A)	1
L14	0E00868A	BT Screw M3x8 Philips Binding Head	3

8.3. Chassis Ass'y (A02)

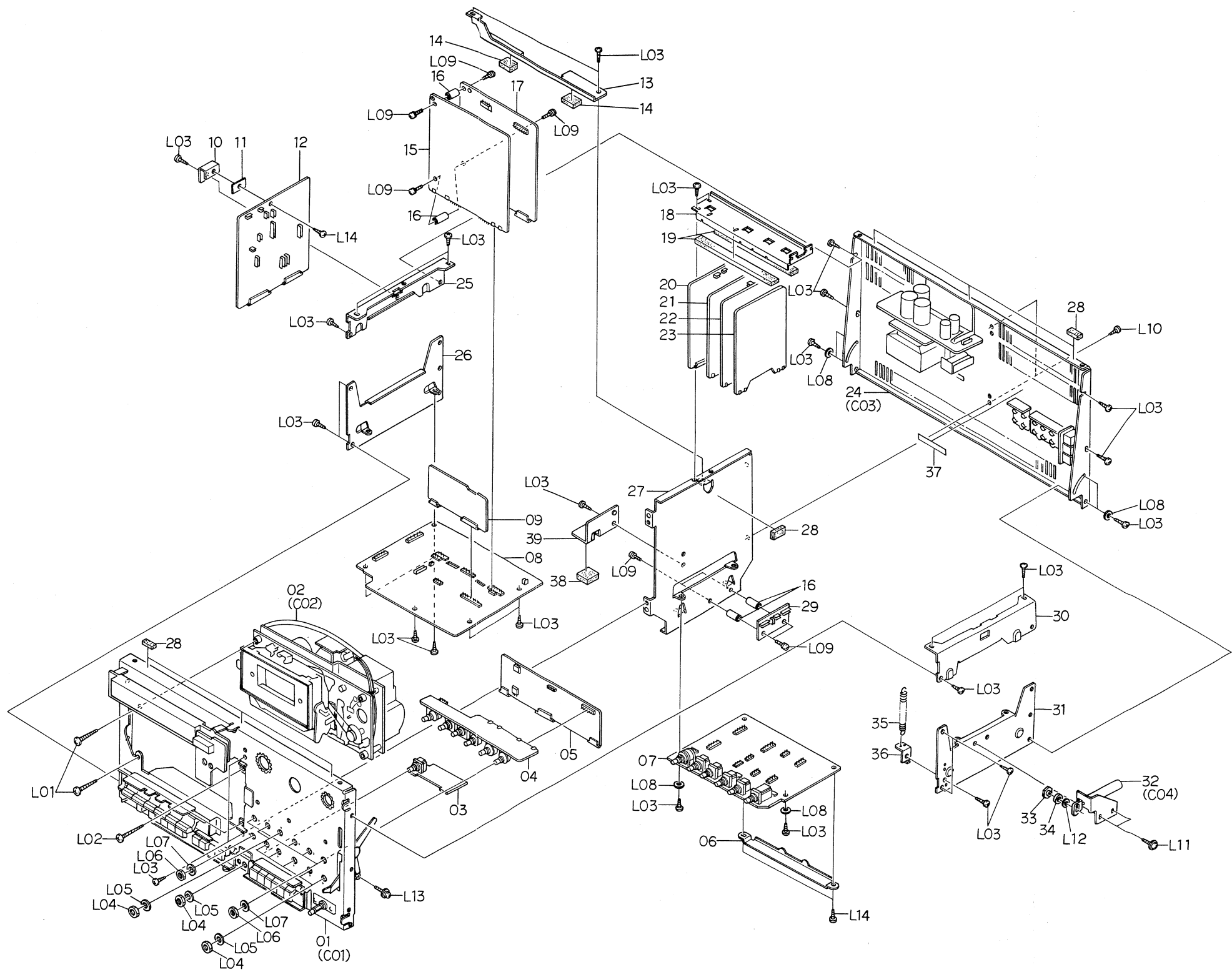


Fig. 8.3

8.4. Adjustment Lid Ass'y (B01)

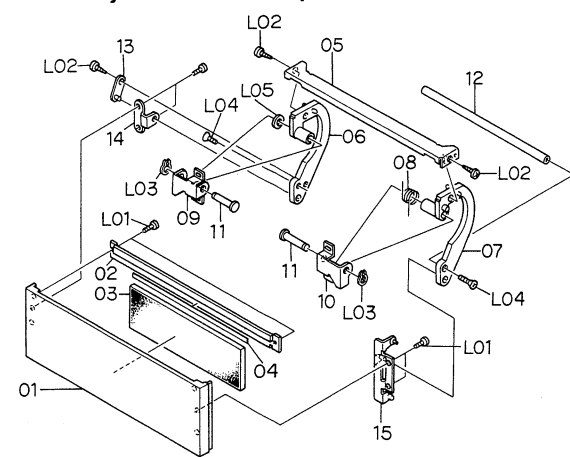


Fig. 8.4

8.5. LED Level Indicator Ass'y (B02)

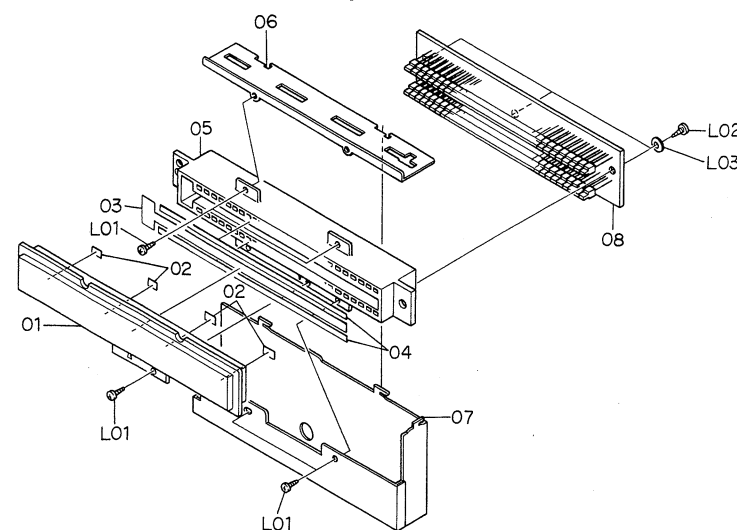


Fig. 8.5

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
B01	HA04051A	Adjustment Lid Ass'y Serial No.: A11801001—	1	B02	BA04350A	LED Level Indicator Ass'y Serial No.: A11801001—	1
01	0H03888A	Adjustment Lid	1	01	0H03916A	Indicator Scale Cover	1
02	0J04166A	Lid Escutcheon	1	02	0J04321A	Deflecting Seal	4
03	0J04195A	Lid Absorber Rubber	1	03	0J04256A	LED Reflector	1
04	0J04279A	Adhesive Tape	1	04	0J04336A	Light Intercepting Seal	2
05	0J04168A	Lid Arm Joint Plate	1	05	0J04253A	LED Indicator Case	1
06	0J04163A	Lid Arm L	1	06	0J04280A	Shield Plate	1
07	0J04164A	Lid Arm R	1	07	0J04281A	LED Indicator Case Holder	1
08	0J04170A	Lid Arm Spring	1	08	BA04300A	Indicator P.C.B. Ass'y	1
09	0J04275A	Lid Arm Holder L	1	L01	0E00855A	BT Screw M2x6 Philips Binding Head	5
10	0J04274A	Lid Arm Holder R	1	L02	0E00857A	BT Screw M3x6 Philips Binding Head	3
11	0J04167A	Lid Arm Rod	2	L03	0E00157A	Washer 3mm (Plastics)	3
12	0J04171A	Lid Arm Joint Rod	1				
13	JA03758A	Lid Arm Plate Ass'y	1				
14	0J04165A	Lid Holder	1				
15	JA03757A	Lid Joint Plate	1				
L01	0E00939A	Screw M2.6x4 Philips Pan Head	6				
L02	0E00860A	BT Screw M3x6 Philips Binding Head (Bronze)	3				
L03	0E00838A	Stopper Ring 4mm	2				
L04	0E00940A	Screw M3x6 Philips Countersunk	2				
L05	0J04310A	Washer FT40	1				

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
C01	JA03750A	Front Chassis Ass'y (U.S.A. & Canada)	1	L05	0J04061A	Washer FT20	1
	JA03751A	Front Chassis Ass'y (Japan)	1	L06	—	Volume Nut	(1)
	JA03752A	Front Chassis Ass'y (220V Class 2, UK, Australia & Others) Serial No.: A11801001—	1	L07	—	Volume Washer	(1)
				L08	—	Headphone Jack Nut	(1)
				L09	—	Headphone Jack Washer	(1)
				L10	0E00920A	Screw M3x6 Philips Pan Head Polywave	2
				L11	0E00622A	Screw M3x5 Philips Pan Head	2
01	BA04275A	Counter P.C.B. Ass'y	1	C02	CA08252A	Mechanism Ass'y N-700ZXL Serial No.: A11801001—	1
02	JA03760A	Lighting House Ass'y	1				
03	0J04219B	Button Bracket Collar	6				
04	0H03912A	Push Button	14				
05	0J04224A	Button Sleeve A	1				
06	0J04225A	Button Sleeve B	1	01	CA08265A	Flywheel Holder Ass'y	1
07	BA04325A	Switch A P.C.B. Ass'y	1	02	0C08096C	Capstan Belt	1
08	BA04327A	Switch C P.C.B. Ass'y	1	03	CA08173A	Supply Flywheel Ass'y	1
09	0J04221A	Push Button Bracket A	1	04	CA08015A	Take-up Flywheel Ass'y	1
10	0J04222A	Button Shaft A	1	05	0C08021B	Thrust Washer 3.1mm	1
11	0J04223A	Push Button Cushion A	2	06	0C08020B	Thrust Washer 2.6mm	1
12	HA04137A	Control Button Ass'y	1	07	0C08243A	Flange Thrust Cap	2
13	BA04271A	Switch Lamp A P.C.B. Ass'y	1	08	0C08244A	Flange Thrust Spring	2
14	0J04218A	Control Button Cushion C	1	09	CA08245A	Sub Mechanism Chassis Ass'y	1
15	0J04308A	Control Button Cushion D	1	10	0C08099B	Control Motor Belt	1
16	0J04217A	Button Shaft C	1	11	0C08098B	Counter Belt B	1
17	0J04220A	Control Button Bracket C	1	12	CA08253A	Main Mechanism Chassis Ass'y	1
18	BA04273A	Control Switch Lamp P.C.B. Ass'y	1	13	0B08844A	10P-H Connector	1
19	BA04274A	Control Switch P.C.B. Ass'y	1	14	0B08652C	3P-H Connector	1
20	0J04232A	Bracket Holder L	1	15	0B08515A	Insh-Lock	16
21	0J04233A	Bracket Holder R	1	16	0C08237A	Azimuth Alignment Wire	1
22	0J04229A	Push Button Sleeve C	1	17	BA04308A	Speed Cal. P.C.B. Ass'y	1
23	BA04326A	Switch B P.C.B. Ass'y	1	18	0C08282A	P.C.B. Holder	1
24	0J04228A	Push Button Cushion B	1	—	0M04169A	Mechanism No. Seal	1
25	0J04227A	Button Shaft B	1	L01	0E00834A	BT Screw M3x30 Philips Pan Head	1
26	0J04226A	Push Button Bracket B	1	L02	0E00178A	Washer 3mm	2
27	0J04230A	Switch Lamp B P.C.B. Holder	1	L03	0E00833A	BT Screw M3x20 Philips Pan Head	3
28	BA04272A	Switch Lamp B P.C.B. Ass'y	1	L04	0E00835A	BT Screw M3x25 Philips Pan Head	1
29	0J04205A	Volume Holder	1	L05	0E00883A	BT Screw M3x8 Philips Pan Head	5
30	0B07351A	Line Input Volume	1	L06	0B08861A	Plastic Rivet	2
31	0J04206A	Switch Holder	1				
32	0J04135C	Mechanism Bracket	1				
33	0J04235A	Headphone Jack Holder	1				
34	0B08511A	Headphone Jack	1				
35	JA03763A	Damper Arm Ass'y	1				
36	0B07253A	Power Switch (U.S.A. & Canada)	1				
	0B07271A	Power Switch (Japan)	1				
	0B07252A	Power Switch (220V Class 2, UK, Australia & Others)	1				
37	0J04268A	Front Chassis	1				
38	0J04178A	Front Chassis Cushion	14				
39	0J04291A	Free Bushing 87mm	3				
40	0J04294A	Free Bushing 58mm	1				
41	0J04292A	Free Bushing 75mm	1				
42	0J04293A	Free Bushing 63mm	1				
43	0M04200A	Counter P.C.B. Seal A	1				
44	0M04202A	Counter P.C.B. Seal B	1				
L01	0E00857A	BT Screw M3x6 Philips Binding Head	28				
L02	0E00868A	BT Screw M3x8 Philips Binding Head	6				
L03	0E00837A	Stopper Ring 3mm	6				
L04	0E00855A	BT Screw M2x6 Philips Binding Head	1				

8.6. Front Chassis Ass'y (C01)

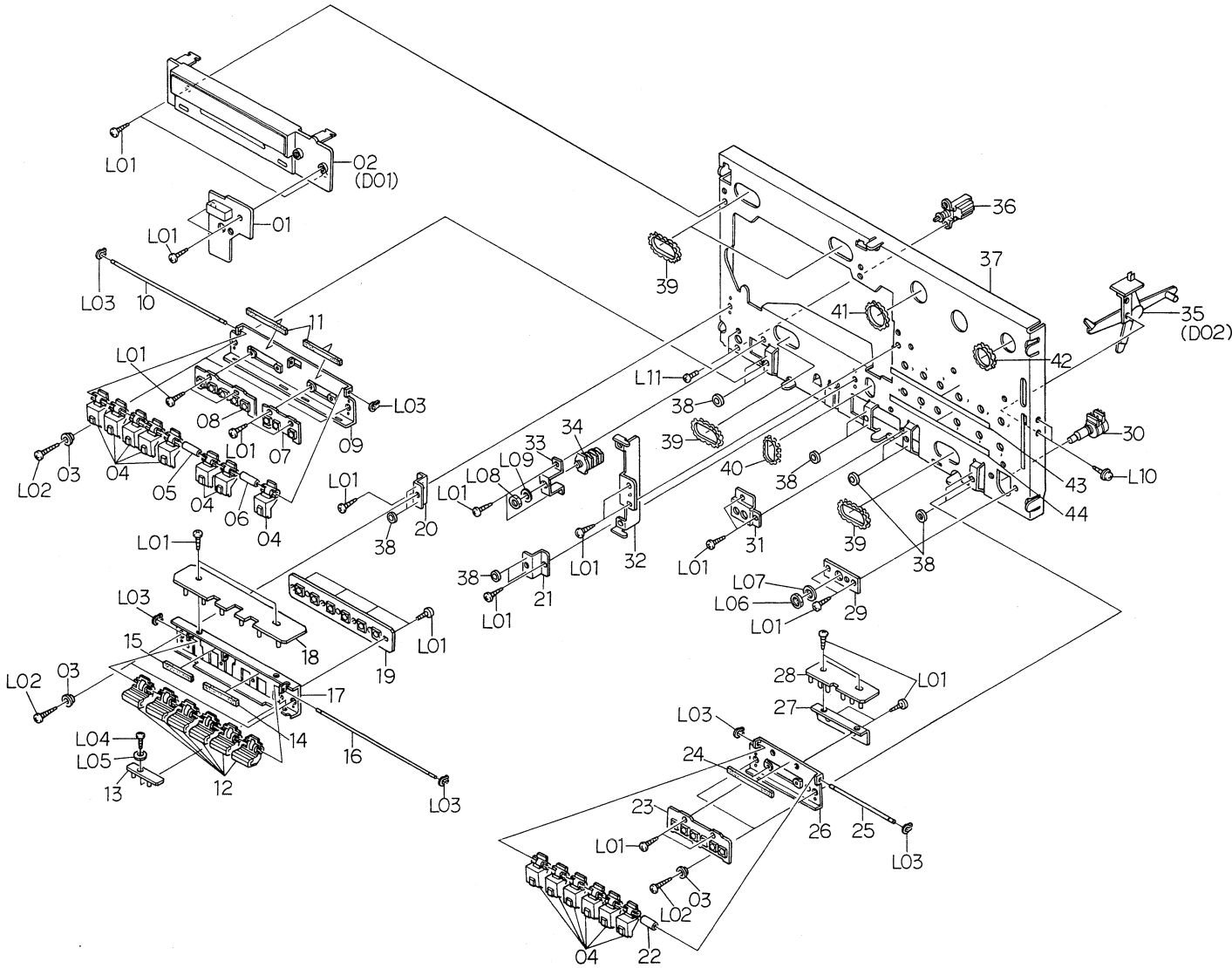


Fig. 8.6

8.7. Mechanism Ass'y N-700ZXL (C02)

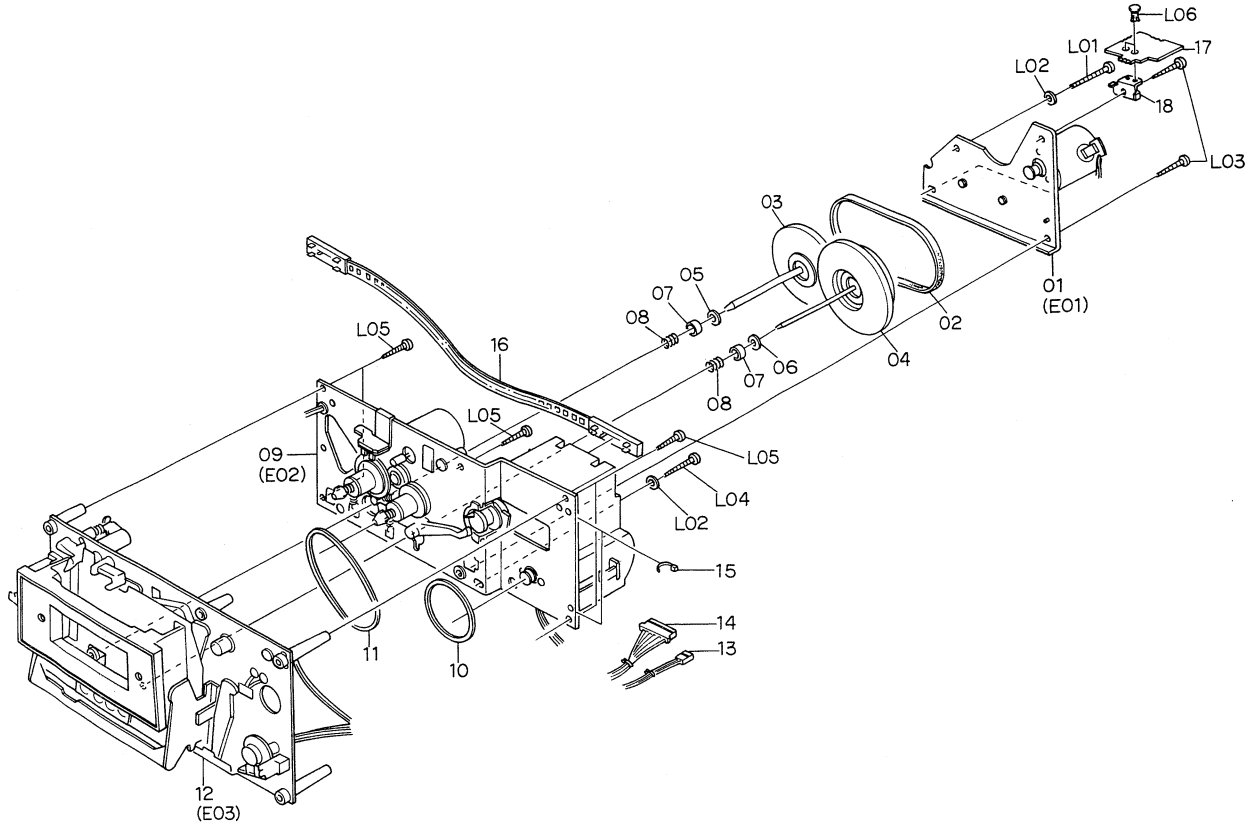


Fig. 8.7

8.8. Rear Panel Ass'y (C03)

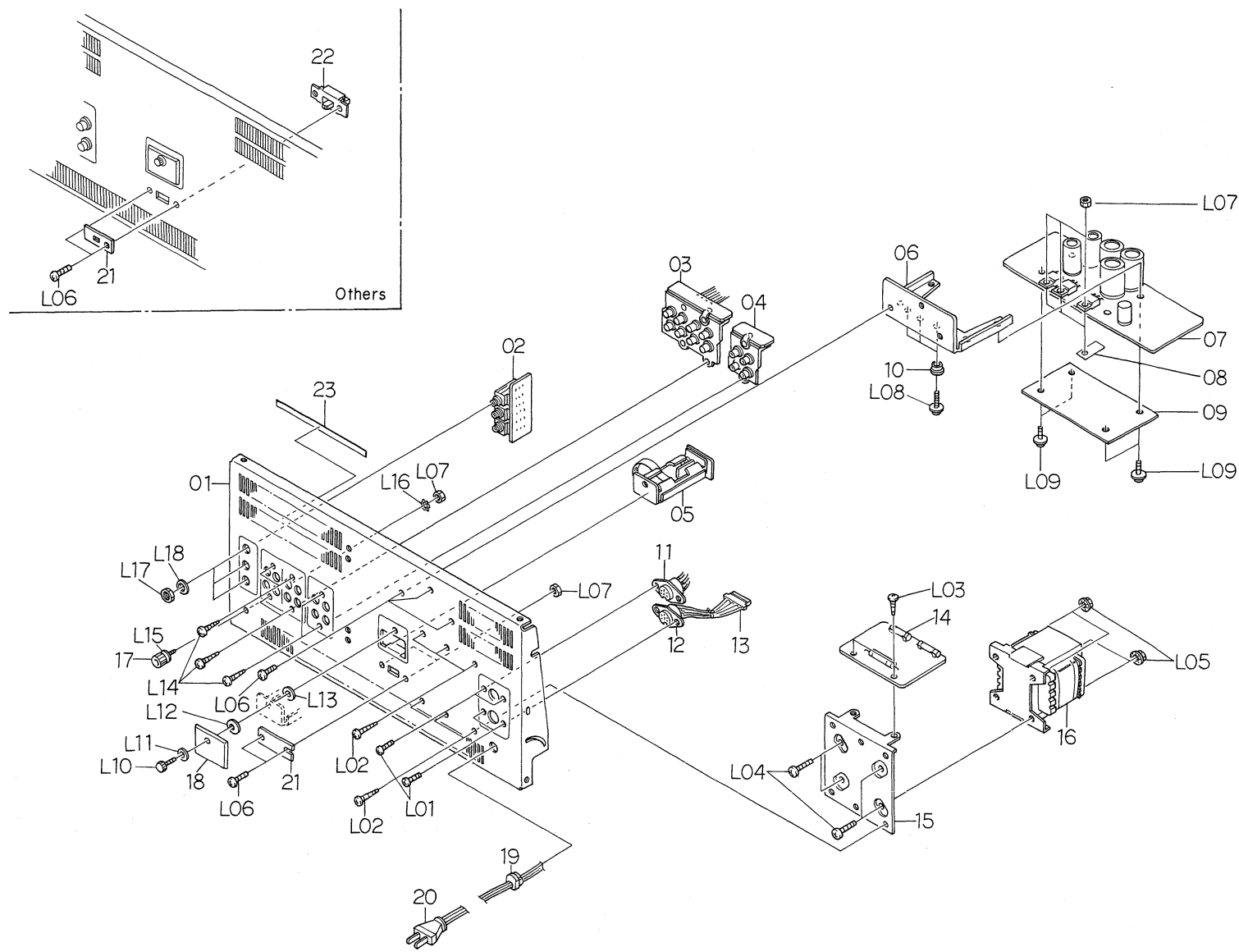


Fig. 8.8

8.9. Pneumatic Damper Ass'y (C04)

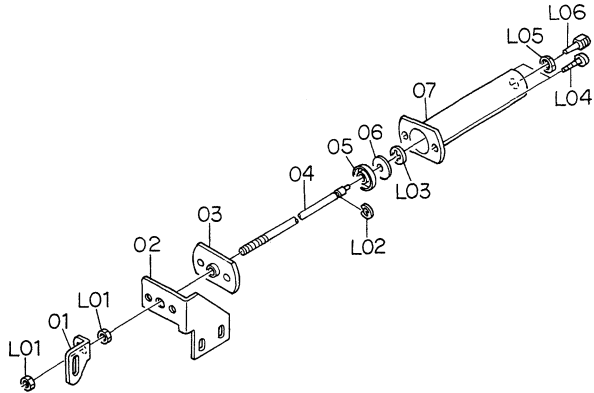


Fig. 8.9

8.10. Lighting House Ass'y (D01)

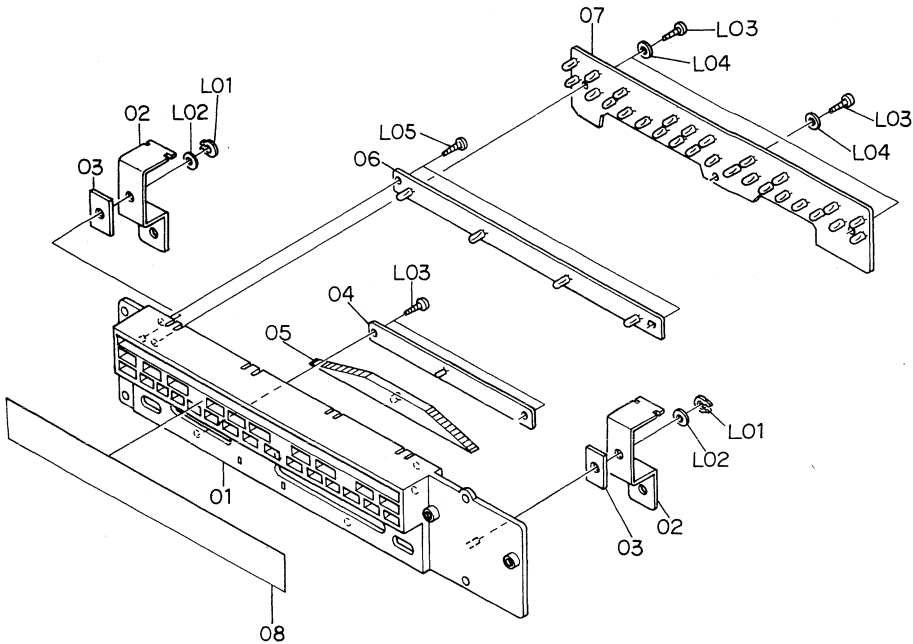


Fig. 8.10

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
C03	HA04053A	Rear Panel Ass'y (U.S.A. & Canada)	1	—	0M03797A	Voltage Label 240V (UK & Australia)	1
	HA04054A	Rear Panel Ass'y (Japan)	1	L01	0E00714A	Screw M2.6x6 Philips Binding Head (Bronze)	4
	HA04056A	Rear Panel Ass'y (220V Class 2)	1	L02	0E00921A	BT Screw M3x8 Philips Binding Head (Black Chromate)	6
	HA04057A	Rear Panel Ass'y (UK)	1	L03	0E00857A	BT Screw M3x6 Philips Binding Head	2
	HA04058A	Rear Panel Ass'y (Australia)	1	L04	0E00929A	Screw M4x8 Philips Binding Head	4
	HA04055A	Rear Panel Ass'y (Others) Serial No.: A11801001—	1	L05	0E00928A	Nut Hex. M4 Flange	4
01	0H03906A	Rear Panel	1	L06	0E00593A	Screw M3x6 Philips Binding Head	5
02	BA04297A	MIC Jack P.C.B. Ass'y	1	L07	0E00507A	Nut Hex. M3	6
03	BA04298A	Pin Jack A P.C.B. Ass'y	1	L08	0E00608A	Screw M3x10 Philips Pan Head	3
04	BA04299A	Pin Jack B P.C.B. Ass'y	1	L09	0E00607A	Screw M3x8 Philips Pan Head	4
05	JA03733A	Battery Case Ass'y	1	L10	0H03825C	Screw M3x5 Sylinder Head	1
06	0B08759A	Heat Sink	1	L11	0E00157A	Washer 3mm (Black Plastics)	1
07	BA04276A	Power Supply P.C.B. Ass'y	1	L12	0H03760B	Washer A	1
08	0B08601A	Insulator Mica T0220	3	L13	0J04067A	Washer FT40	1
09	0B06256A	Insulator	1	L14	0E00860A	BT Screw M3x6 Philips Binding Head (Bronze)	6
10	0B08602A	Transistor Bushing T0220	3	L15	0E00732A	Washer 3mm	1
11	0B08584A	8P DIN Socket	1	L16	0E00172A	Washer 3mm Toothed Lock	4
12	0B08495A	8P DIN Socket	1	L17	0E00934A	MIC Jack Nut	3
13	0B08748A	8P-H Connector	1	L18	0E00935A	MIC Jack Washer	3
14	BA04260A	Fuse P.C.B. Ass'y (U.S.A. & Canada)	1	C04	JA03753A	Pneumatic Damper Ass'y Serial No.: A11801001—	1
	BA04261A	Fuse P.C.B. Ass'y (Japan)	1	01	0J04285B	Damper Guide	1
	BA04262A	Fuse P.C.B. Ass'y (220V Class 2)	1	02	0J04200A	Damper Arm Plate	1
	BA04263A	Fuse P.C.B. Ass'y (UK & Australia)	1	03	0J04201A	Damper Holder	1
	BA04369A	Fuse P.C.B. Ass'y (Others)	1	04	0J04198A	Damper Piston	1
15	0J04147A	Transformer Plate	1	05	0C08102B	Damper Ring	1
16	0B06639A	Power Transformer (U.S.A. & Canada)	1	06	0C08010C	Damper Plate	1
	0B06640A	Power Transformer (Japan)	1	07	0J04197A	Damper Sylinder	1
	0B06638A	Power Transformer (UK, 220V Class 2 & Australia)	1	L01	0E00507A	Nut Hex. M3	2
	0B06637A	Power Transformer (Others)	1	L02	0E00698A	E-Ring 2.5mm	1
17	0B03920B	Ground Terminal	1	L03	0E00874A	Stopper Ring CS 2.5mm	1
18	JA03733A	Battery Case Cover	1	L04	0E00846A	BT Screw M3x8 Philips Pan Head	2
19	0B08037U	Cord Bushing (U.S.A., Canada, Japan, 220V Class 2, Australia & Others)	1	L05	0C03857A	Lock Nut	1
	0B08351A	Cord Bushing (UK)	1	L06	0J04199A	Pneumatic Adjustment Screw	1
20	0B08533A	Power Cord (U.S.A., Canada & Others)	1	D01	JA03760A	Lighting House Ass'y Serial No.: A11801001—	1
	0B08219B	Power Cord (Japan)	1	01	0J04212A	Lighting House	1
	0B08093U	Power Cord (220V Class 2)	1	02	0J04213A	Lamp House Bracket	2
	0B08348A	Power Cord (UK)	1	03	0J04234A	Rubber Cushion	2
	0B05241A	Power Cord (Australia)	1	04	BA04328A	Lamp A P.C.B. Ass'y	1
21	0J03663C	Switch Cover C (U.S.A., Canada, Japan, 220V Class 2, UK & Australia)	1	05	0H03606B	Lamp House	1
	0M03948A	Voltage Lock Plate (Others)	1	06	BA04269A	Lamp S P.C.B. Ass'y	1
22	0B07092U	Voltage Selector (Others)	1	07	BA04270A	Lamp L P.C.B. Ass'y	1
—	0M04182A	Amp. No. Seal	1	08	0J04307A	Deflecting Seal	1
—	0M04198A	Fuse Caution Label (U.S.A. & Canada)	1	L01	0E00837A	Stopper Ring 3mm	2
—	0M04201A	Module Seal	1	L02	0E00597A	Washer 3mm	2
—	0M04203A	ABLE Label (U.S.A. & Canada)	1	L03	0E00857A	BT Screw M3x6 Philips Binding Head	5
—	0M03798A	Nakamichi Label (Japan)	1	L04	0E00157A	Washer 3mm (Plastics)	3
—	0M03794A	Voltage Label 100V (Japan)	1	L05	0E00941A	BT Screw M3x5 Philips Binding Head	2
—	0M03955A	Voltage Label 120V/220V—240V (Others)	1				
—	0M03796A	Voltage Label 220V(220V Class 2)	1				

8.11. Damper Arm Ass'y (D02)

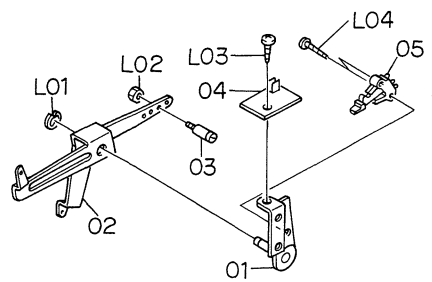


Fig. 8.11

8.12. Flywheel Holder Ass'y (E01)

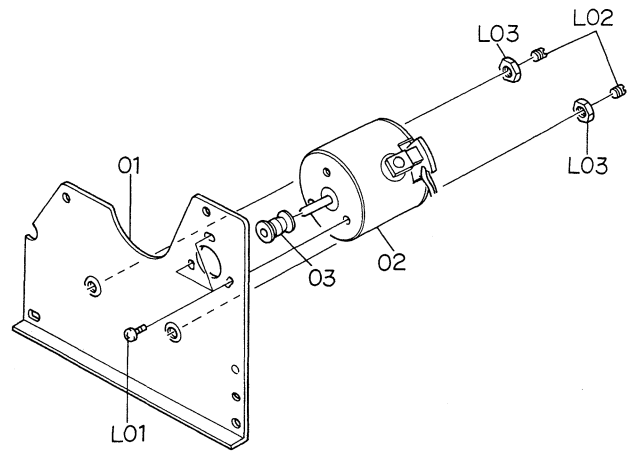


Fig. 8.12

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
D02	JA03763A	Damper Arm Ass'y Serial No.: A11801001—	1	E01	CA08265A	Flywheel Holder Ass'y Serial No.: A11801001—	1
01	JA03769A	Damper Arm Holder Ass'y	1	01	0C08013I	Flywheel Holder	1
02	0J04237A	Damper Arm	1	02	0C08271A	Capstan Motor	1
03	0J04271A	Spring Hook	1	03	0C08079G	Capstan Motor Pulley	1
04	BA04310A	Connector P.C.B. B Ass'y	1	L01	0E00226A	Screw M2.6x4 Philips Pan Head	3
05	0C08133A	Eject Sensor	1	L02	0C08068C	Thrust Screw	2
L01	0E00104A	E-Ring 5mm	1	L03	0C03857A	Lock Nut	2
L02	0E00507A	Nut Hex. M3	1				
L03	0E00840A	BT Screw M2x8 Philips Pan Head	2				
L04	0E00857A	BT Screw M3x6 Philips Binding Head	1				

8.13. Sub Mechanism Chassis Ass'y (E02)

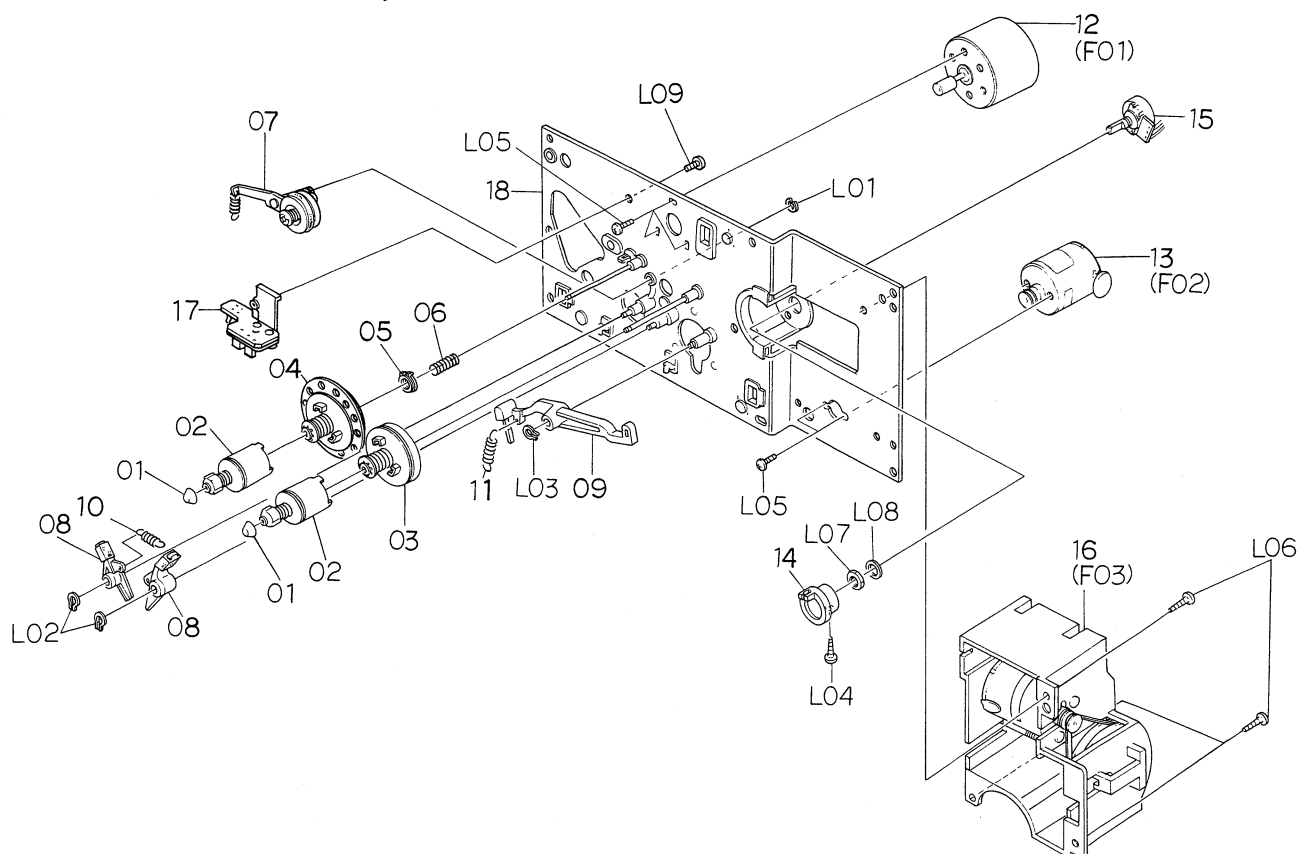


Fig. 8.13

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
E02	CA08245A	Sub Mechanism Chassis Ass'y Serial No.: A11801001—	1	L04	0E00859A	BT Screw M2.6x6 Philips Binding Head	1
01	0C08039B	Reel Hub Head	2	L05	0E00226A	Screw M2.6x4 Philips Pan Head	5
02	CA08038C	Reel Hub B Ass'y	2	L06	0E00846A	BT Screw M3x8 Philips Pan Head	3
03	CA08037A	Reel Hub Take-up Ass'y	1	L07	—	Volume Nut	(1)
04	CA08236A	Reel Hub Supply Ass'y	1	L08	—	Volume Washer	(1)
05	CA08039A	Back Tension Ass'y	1	L09	0E00792A	BT Screw M2.6x6 Philips Pan Head	1
06	0C08269A	Back Tension Spring	1				
07	CA08193A	Idler Ass'y	1				
08	CA08042A	Brake Ass'y	2				
09	0C08030C	Brake Drive Arm	1				
10	0C08129A	Brake Arm Spring	1				
11	0C08128A	Brake Drive Arm Spring	1				
12	CA08242A	Reel Motor Ass'y	1				
13	CA08034A	Control Motor Ass'y	1				
14	0C08053B	Volume Coupler	1				
15	0B07240A	Volume Control 10kΩ (B)	1				
16	CA08148A	Azimuth Alignment Motor Ass'y	1				
17	BA04237B	Counter Pulse Generator P.C.B. Ass'y	1				
18	CA08194A	Sub Chassis Ass'y	1				
L01	0E00698A	E-Ring 2.5mm	1				
L02	0E00837A	Stopper Ring 3mm	2				
L03	0E00838A	Stopper Ring 4mm	1				

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
E03	CA08253A	Main Mechanism Chassis Ass'y Serial No.: A11801001—	1	L14	0E00859A	BT Screw M2.6x6 Philips Binding Head	1
				L15	0C08255A	Washer 2.6mm	1
01	CA08125A	Cassette Case Holder L Ass'y	1				
02	0C08151A	Lid Arm Spring Tube	1				
03	CA08022A	Cassette Case Holder R Ass'y	1				
04	CA08240A	Cassette Case Ass'y	1				
05	CA08259A	Cover Plate Ass'y	1				
06	CA08262A	Head Mount Base Ass'y	1				
07	0C08250A	Supply Pressure Roller Spring	1				
08	0C08221A	Supply Pressure Roller Spring B	1				
09	CA08053B	Supply Pressure Roller Ass'y	1				
10	0C08122B	Supply Pressure Roller Thrust Spring	1				
11	CA08079B	Take-up Pressure Roller Ass'y	1				
12	0C08183B	Take-up Pressure Roller Thrust Spring	1				
13	CA08260A	Head Base Ass'y F	1				
14	0C08182A	Pressure Roller Drive Bar B	1				
15	0C08086B	Head Base Roller	3				
16	0C08050B	Record Sensor	1				
17	0C08051E	Cassette Hold Arm	1				
18	0C08120A	Cassette Hold Spring	1				
19	CA08196A	Back Tension Arm Ass'y	1				
20	0C08254A	Tension Arm Collar	1				
21	CA08027A	Head Base Drive Arm Ass'y	1				
22	0C08143C	Head Base Drive Arm Spring	1				
23	CA08026A	Pressure Roller Drive Arm Ass'y	1				
24	CA08237A	Auto Shut-off Ass'y	1				
25	0C08119A	Record Protector	1				
26	0C08194C	Damper Lock Arm	1				
27	0C08153A	Damper Lock Arm Spring Tube	1				
28	0C08116A	Record Arm Spring	2				
29	CA08030A	Pneumatic Damper Ass'y	1				
30	CA08023A	Supply Capstan Flange Ass'y	1				
31	CA08024A	Take-up Capstan Flange Ass'y	1				
32	0C08186A	Cam Drive Gear	1				
33	0C08029H	Control Cam	1				
34	0C08117A	Counter-Load Arm Spring	1				
35	0C08152A	Counter-Load Arm Spring Tube	1				
36	CA08028A	Counter-Load Arm Ass'y	1				
37	CA08183A	Main Chassis Ass'y	1				
L01	0E00837A	Stopper Ring 3mm	9				
L02	0E00832A	BT Screw M3x14 Philips Pan Head	2				
L03	0E00834A	BT Screw M3x30 Philips Pan Head	2				
L04	0E00831A	BT Screw M3x10 Philips Pan Head	3				
L05	0E00254A	Washer 3.1mm (Plastics)	2				
L06	0E00222A	E-Ring 2mm	2				
L07	0E00876A	BT Screw M2.6x8 Philips Pan Head	8				
L08	0C08060B	Height Adjustment Nut	2				
L09	0E00142A	Washer 2.6mm	2				
L10	0E00879A	BT Screw M2x15 Philips Pan Head	1				
L11	0E00838A	Stopper Ring 4mm	3				
L12	0E00846A	BT Screw M3x8 Philips Pan Head	3				
L13	0E00895A	Earth Lug 3mm	2				

8.14. Main Mechanism Chassis Ass'y (E03)

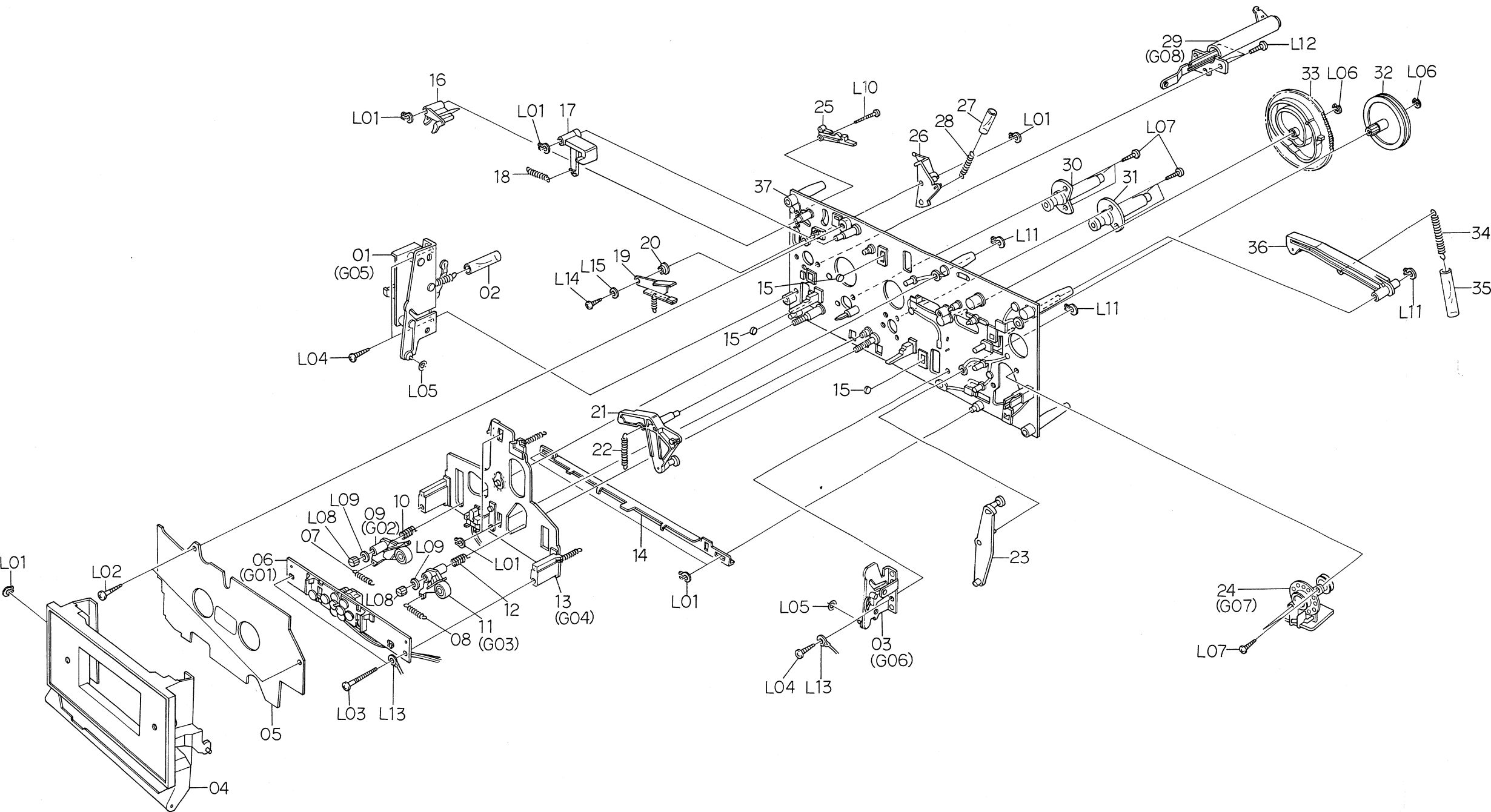


Fig. 8.14

8.15. Reel Motor Ass'y (F01)

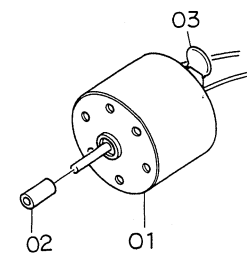


Fig. 8.15

8.16. Control Motor Ass'y (F02)

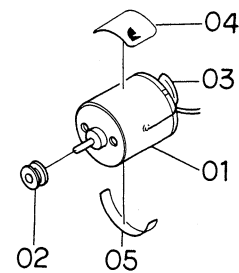


Fig. 8.16

8.17. Azimuth Alignment Motor Ass'y (F03)

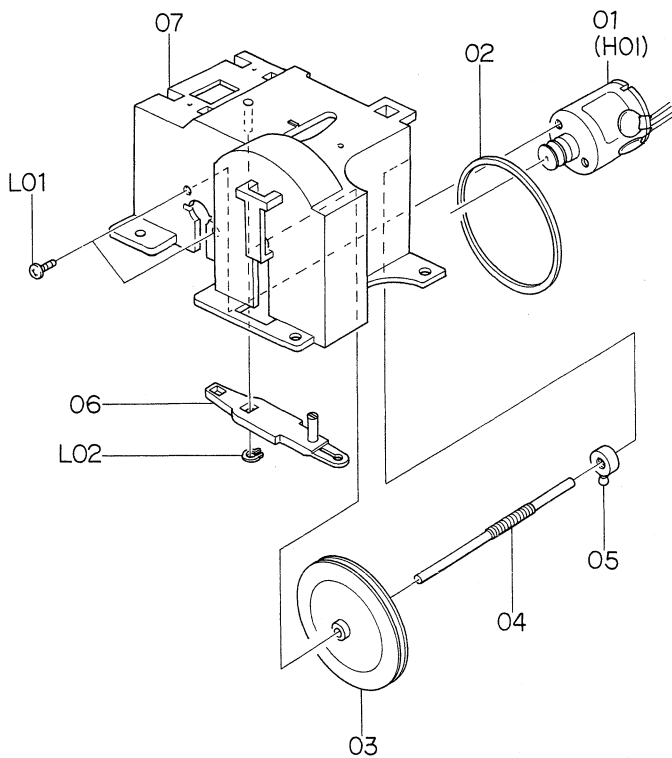


Fig. 8.17

8.18. Head Mount Base Ass'y (G01)

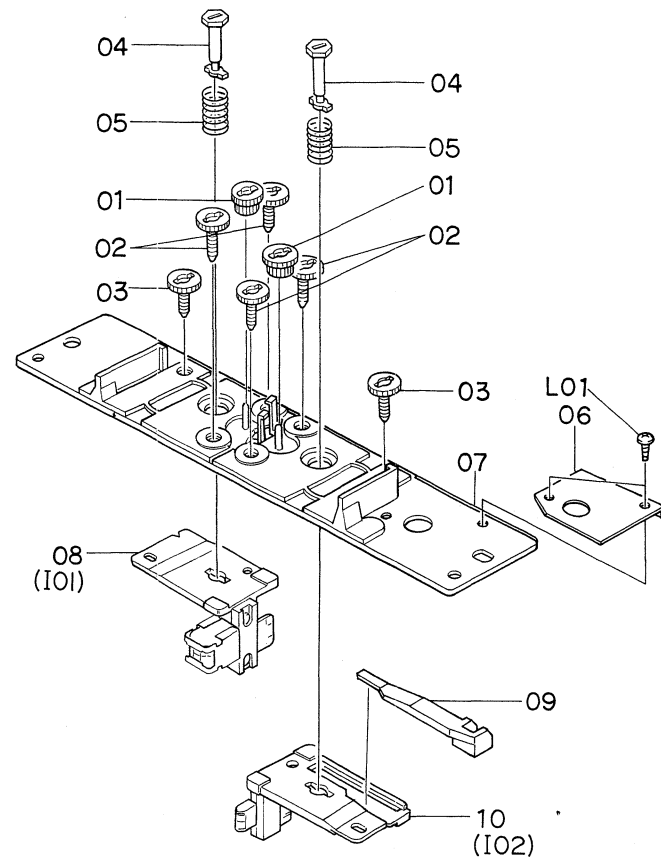


Fig. 8.18

8.19. Supply Pressure Roller Ass'y (G02)

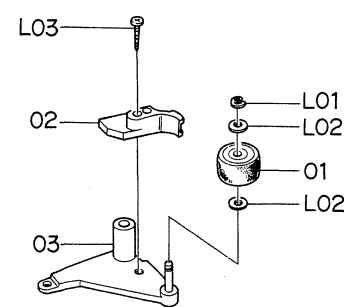


Fig. 8.19

8.20. Take-up Pressure Roller Ass'y (G03)

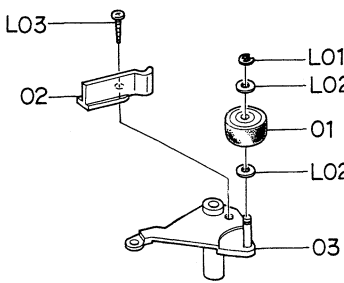


Fig. 8.20

8.21. Head Base Ass'y E (G04)

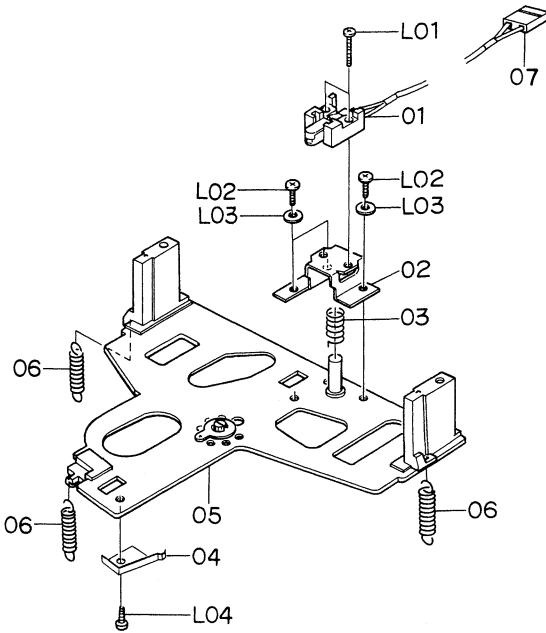


Fig. 8.21

8.22. Cassette Case Holder L Ass'y (G05)

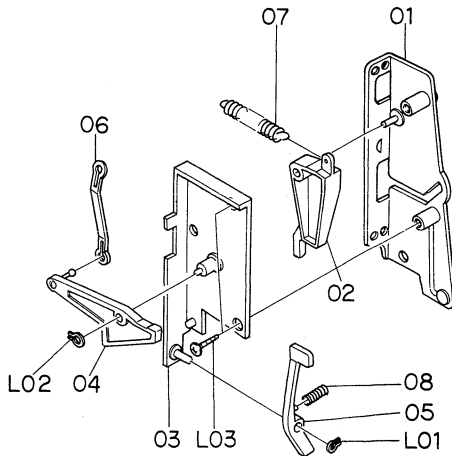


Fig. 8.22

8.23. Cassette Case Holder R Ass'y (G06)

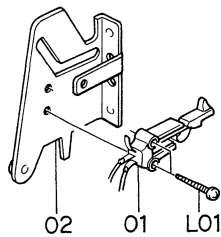


Fig. 8.23

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
F01	CA08242A	Reel Motor Ass'y Serial No.: A11801001—	1	G03	CA08079B	Take-up Pressure Roller Ass'y Serial No.: A11801001—	1
01	0C08272A	Reel Motor	1	01	0C08164G	Pressure Roller	1
02	0C08063F	Reel Motor Pulley	1	02	0C08181C	Take-up Tape Guide	1
03	0B09290A	Ceramic Capacitor 0.01μ 50V Z	1	03	CA08073B	Take-up Pressure Roller Arm Ass'y	1
F02	CA08034A	Control Motor Ass'y Serial No.: A11801001—	1	L01	0E00042A	E-Ring 1.5mm	1
01	0C08137A	Control Motor	1	L02	0C08024A	Washer 2mm	2
02	0C08064A	Control Motor Pulley	1	L03	0E00788A	BT Screw M2x8 Philips Pan Head	1
03	0B09292A	Ceramic Capacitor 0.1μ 50V Z	1	G04	CA08260A	Head Base Ass'y F Serial No.: A11801001—	1
04	0M03985A	Motor Label 730	1	01	GA02083A	E-8LH Erase Head	1
05	0M03988A	Motor Seal B	1	02	0C08158D	EH Hold Plate	1
F03	CA08148A	Azimuth Alignment Motor Ass'y Serial No.: A11801001—	1	03	0C08166A	EH Hold Plate Spring	1
01	CA08149A	Azimuth Motor Ass'y	1	04	0C08174C	Cassette Hold Spring	1
02	0C08099B	Control Motor Belt	1	05	CA08003Q	Head Base Ass'y	1
03	0C08229B	Drive Pulley	1	06	0C08175A	Head Base L Spring	3
04	0C08230B	Drive Pulley Shaft	1	07	0B08816B	2P-H Connector	1
05	0C08231C	Drive Nut	1	L01	0E00889A	Screw M1.7x8 Philips Pan Head	2
06	0C08232C	Drive Bar	1	L02	0E00909A	Screw M2x6 Philips Pan Head	3
07	0C08233G	Drive Unit Base	1	L03	0E00117A	Washer 2mm	3
L01	0E00226A	Screw M2.6x4 Philips Pan Head	2	L04	0E00853A	BT Screw M2x3 Philips Pan Head	1
L02	0E00837A	Stopper Ring 3mm	1	G05	CA08125A	Cassette Case Holder L Ass'y Serial No.: A11801001—	1
G01	CA08262A	Head Mount Base Ass'y Serial No.: A11801001—	1	01	CA08090F	Cassette Case L Sub Ass'y	1
01	0C08028C	Head Height Adjustment Gear	2	02	0C08073C	Lid Arm A	1
02	0C08027E	Head Height Adjustment Screw	4	03	0C08195G	Arm Holder	1
03	0C08026D	Azimuth Alignment Screw	2	04	0C08196B	Eject Arm A	1
04	0C08161B	Spring Stopper	2	05	0C08197C	Eject Arm B	1
05	0C08187B	Head Plate Spring	2	06	0C08199B	Eject Arm Joint	1
06	0C08236A	Azimuth Alignment Wire Hold Plate	1	07	0C08114A	Lid Arm Spring	1
07	CA08083C	Head Mount Base Sub Ass'y	1	08	0C08211C	Eject Arm Spring	1
08	CA08261A	P-8L Playback Head Ass'y	1	L01	0E00837A	Stopper Ring 3mm	1
09	0C08235A	Azimuth Alignment Plate	1	L02	0E00838A	Stopper Ring 4mm	1
10	CA08263A	R-8L Record Head Ass'y	1	L03	0E00865A	BT Screw M3x10 Philips Binding Head	2
L01	0E00917A	BT Screw M2.6x5 Philips Pan Head	2	G06	CA08022A	Cassette Case Holder R Ass'y Serial No.: A11801001—	1
G02	CA08053B	Supply Pressure Roller Ass'y Serial No.: A11801001—	1	01	0C08133A	Eject Sensor	1
01	0C08164G	Pressure Roller	1	02	CA08044A	Cassette Case Holder R Sub Ass'y	1
02	0C08189B	Supply Tape Guide	1	L01	0E00840A	BT Screw M2x8 Philips Pan Head	2
03	CA08061A	Supply Pressure Roller Arm Ass'y	1				
L01	0E00042A	E-Ring 1.5mm	1				
L02	0C08024A	Washer 2mm	2				
L03	0E00788A	BT Screw M2x8 Philips Pan Head	1				

8.24. Auto Shut-off Ass'y (G07)

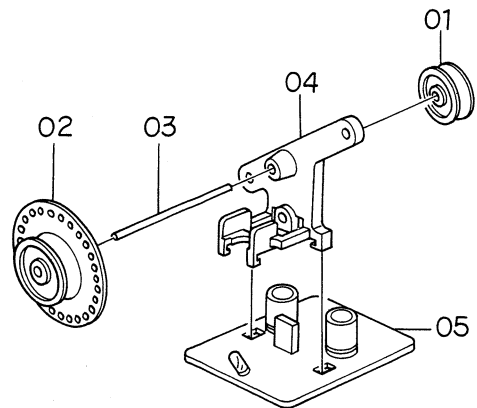


Fig. 8.24

8.25. Pneumatic Damper Ass'y (G08)

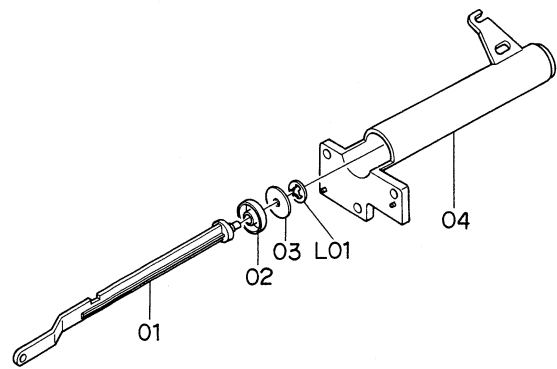


Fig. 8.25

8.26. Azimuth Motor Ass'y (H01)

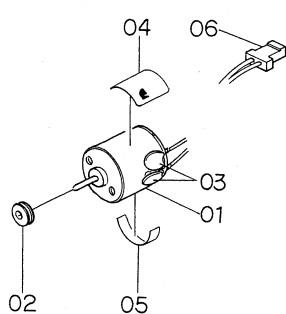


Fig. 8.26

8.27. P-8L Playback Head Ass'y (I01)

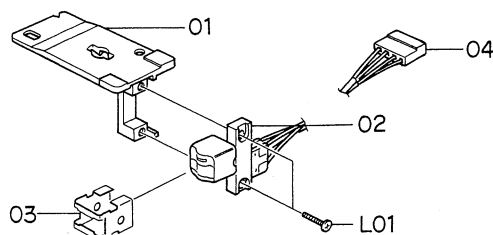


Fig. 8.27

8.28. R-8L Record Head Ass'y (I02)

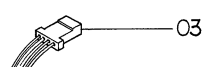


Fig. 8.28

Schematic Ref. No.	Part No.	Description	Q'ty
G07	CA08237A	Auto Shut-off Ass'y Serial No.: A11801001—	1
01	0C08047A	Shut-off Pulley A	1
02	0C08206B	Shut-off Pulley B	1
03	0C08088B	Shut-off Pulley Shaft	1
04	0C08207B	Shut-off Pulley Holder	1
05	BA04070A	Shut-off P.C.B. Ass'y	1
G08	CA08030A	Pneumatic Damper Ass'y Serial No.: A11801001—	1
01	0C08058C	Damper Piston	1
02	0C08102C	Damper Ring	1
03	0C08010C	Damper Plate	1
04	0C08059D	Sylinder	1
L01	0E00874A	Stopper Ring CS 2mm	1
H01	CA08149A	Azimuth Motor Ass'y Serial No.: A11801001—	1
01	0C08137A	Control Motor	1
02	0C08064A	Control Motor Pulley	1
03	0B09292A	Ceramic Capacitor 0.1 μ 50V Z	2
04	0M03985A	Motor Label 730	1
05	0M03988A	Motor Seal B	1
06	0B08708A	2P Connector	1
I01	CA08261A	P-8L Playback Head Ass'y Serial No.: A11801001—	1
01	0C08160F	Head Plate	1
02	GA02085A	P-8LZ Playback Head	1
03	0C08169D	Pad Lifter 54	1
04	0B08817B	4P-H Connector	1
L01	0E00886A	Screw M1.7x6.5 Philips Pan Head	2
I02	CA08263A	R-8L Record Head Ass'y Serial No.: A11801001—	1
01	0C08234B	Head Plate	1
02	GA02084A	R-8LZ Record Head	1
03	0B08818B	4P-H Connector	1
L01	0E00887A	Screw M1.7x4 Philips Pan Head	2

9. TIMING CHART AND FLOW CHART

9.1. Overall Timing Chart

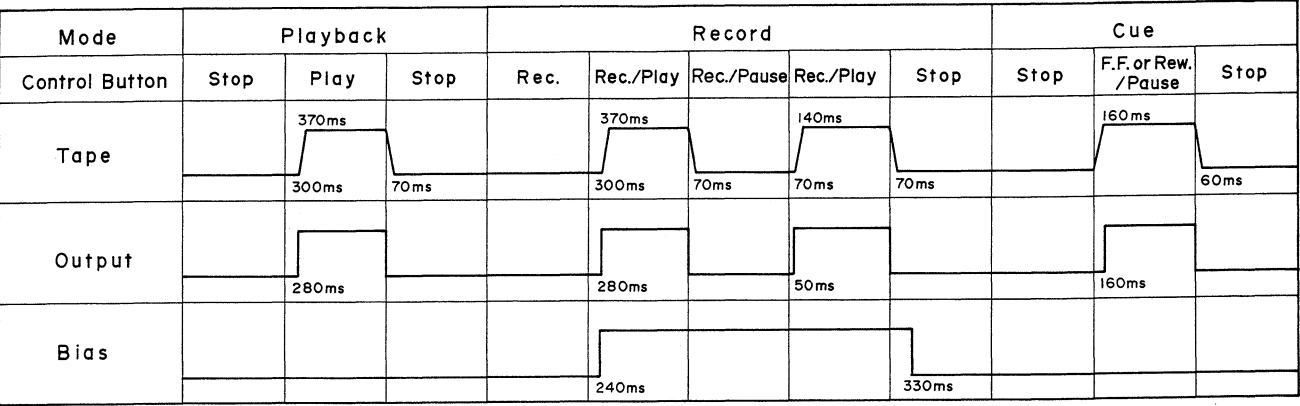


Fig. 9.1

9.2. Auto Calibration and RAMM Control

(1) Auto Calibration Timing Chart

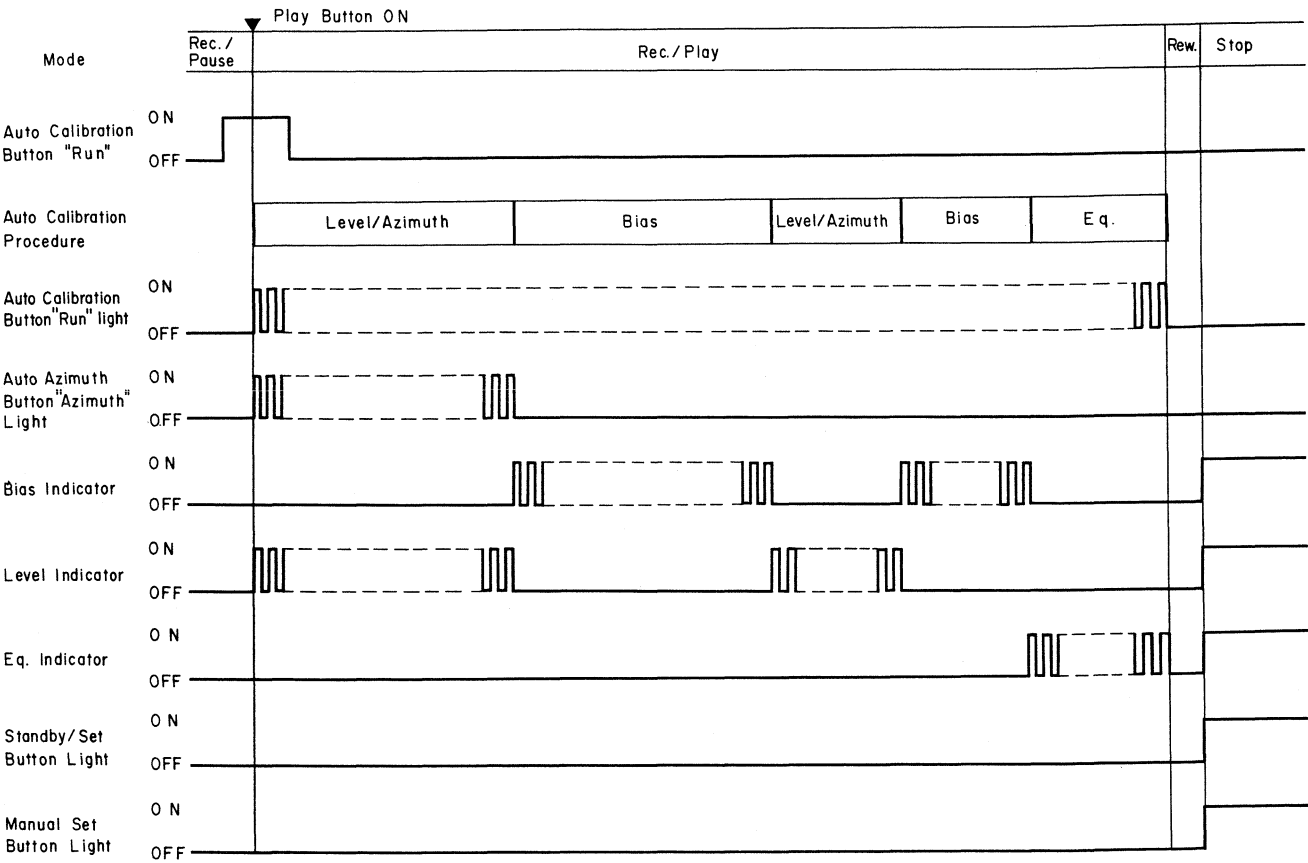


Fig. 9.2

(2) Auto Calibration Flow Chart

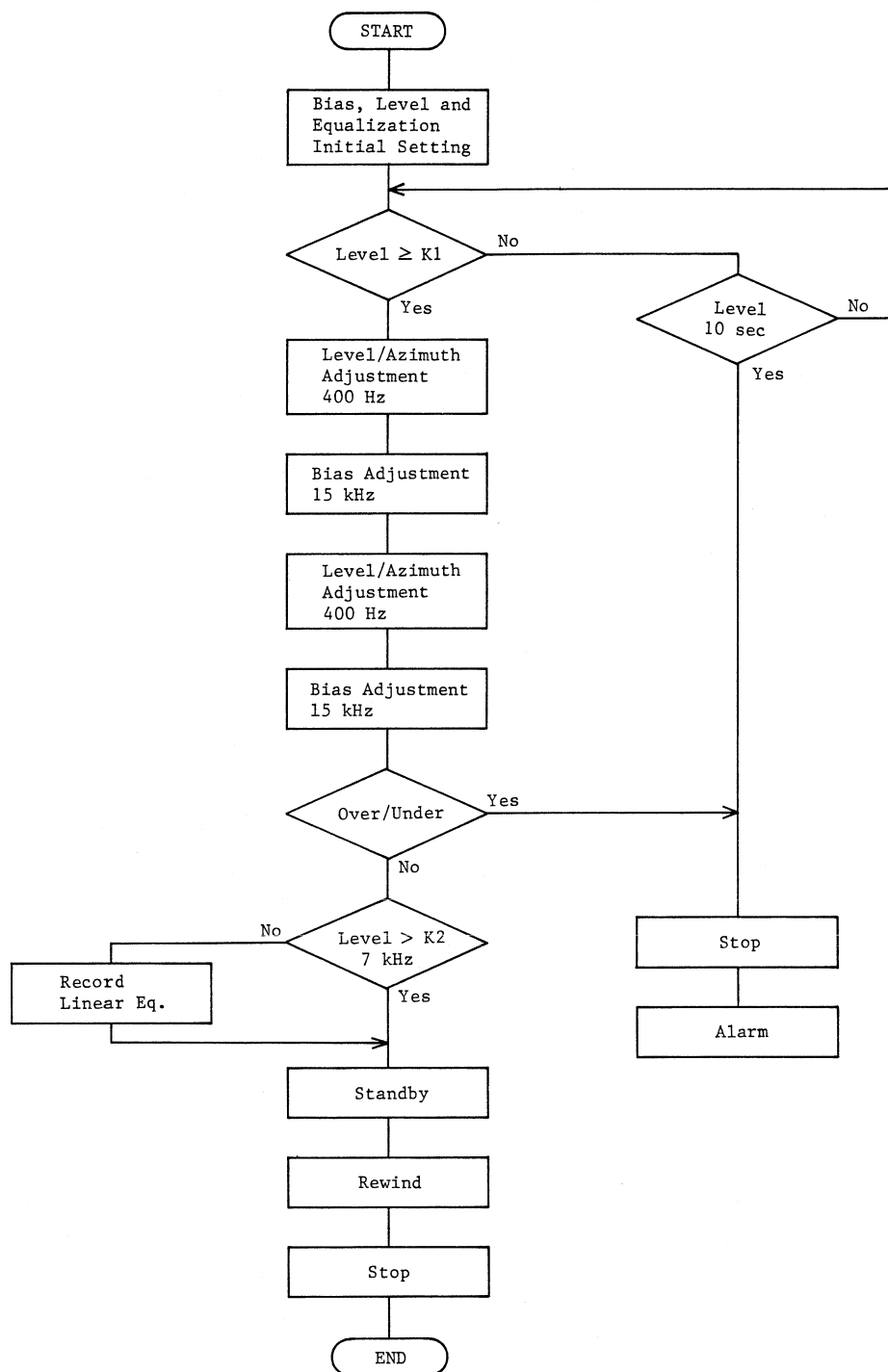


Fig. 9.3

(3) RAMM Coding Timing Chart

(a) Automatic Coding

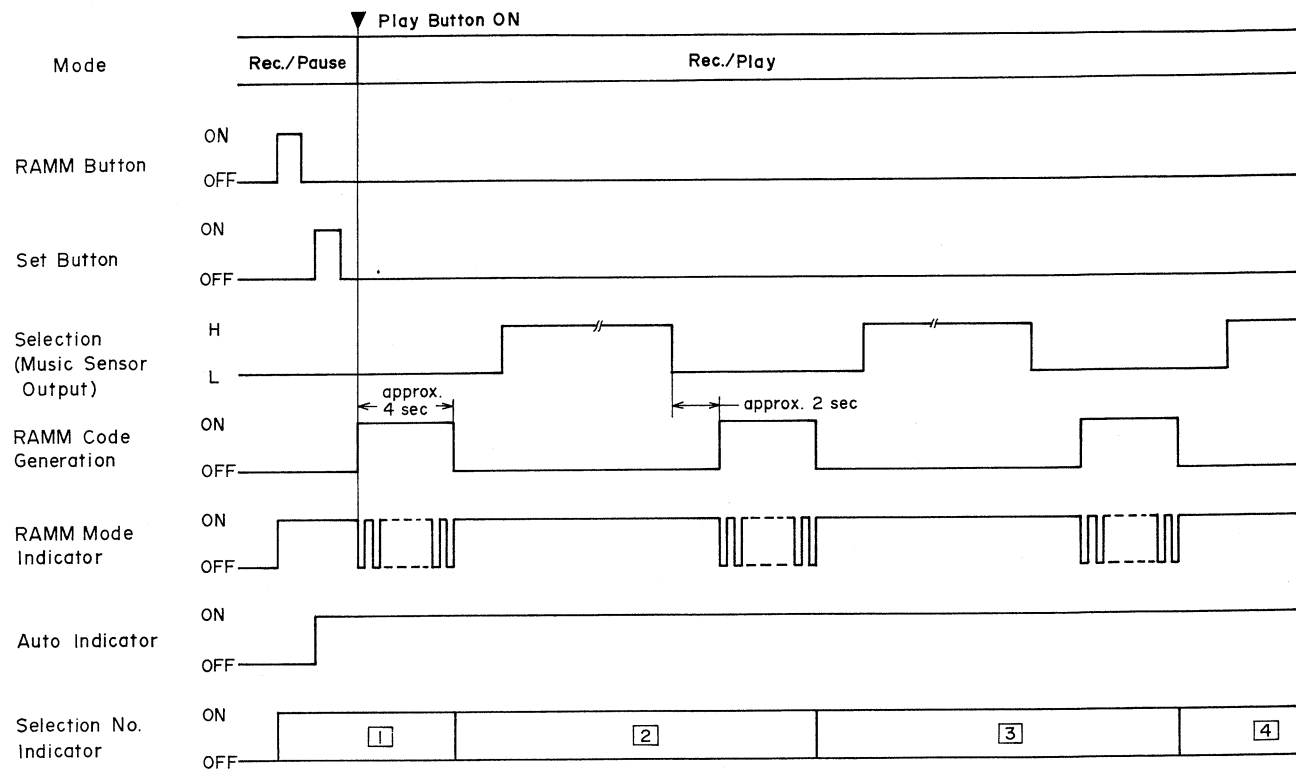


Fig. 9.4

(b) Manual Coding

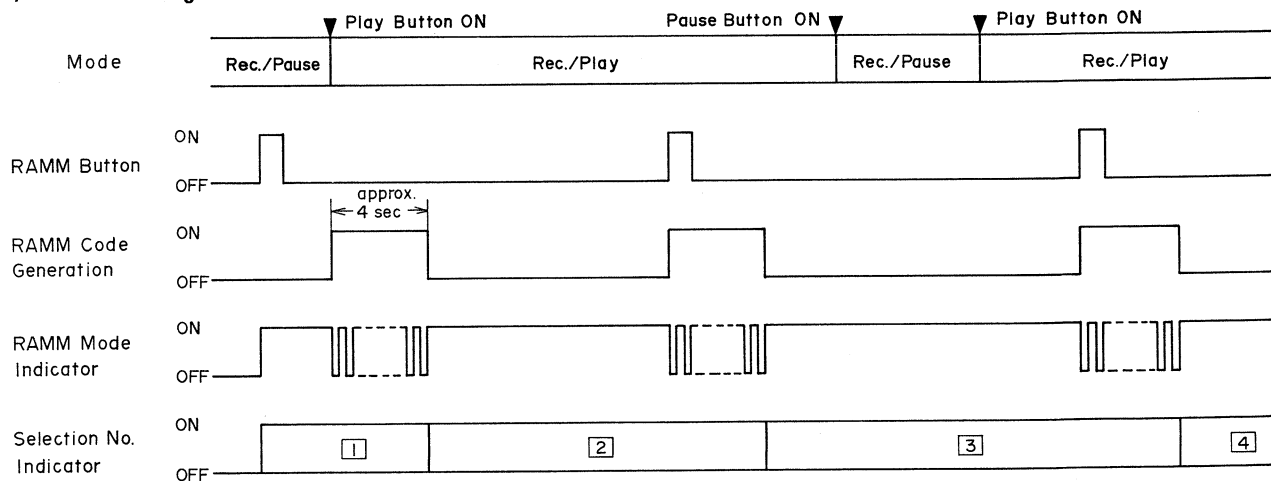


Fig. 9.5

(4) RAMM Code Tape Playback Flow Chart and Timing Chart

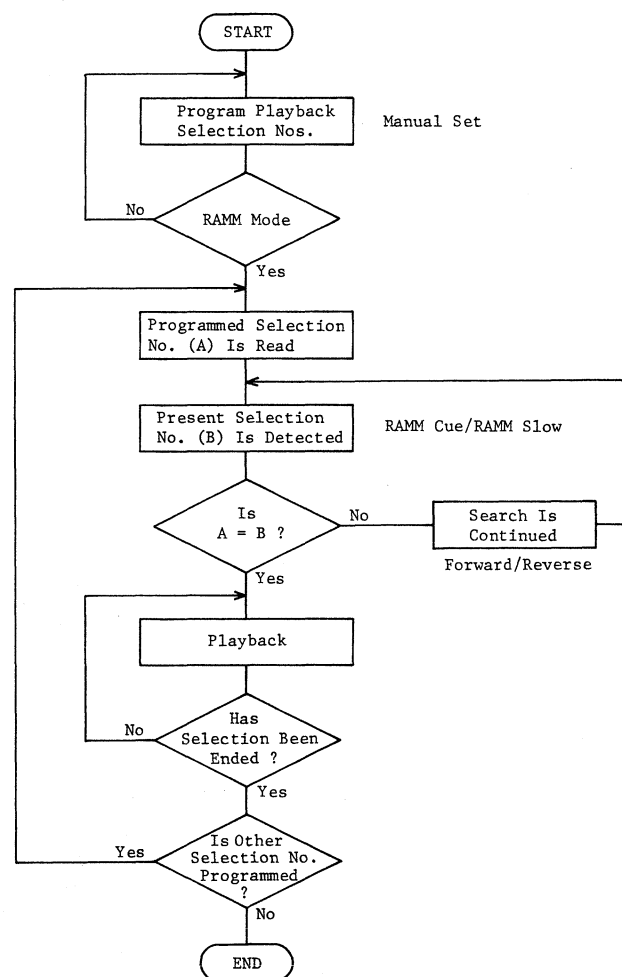
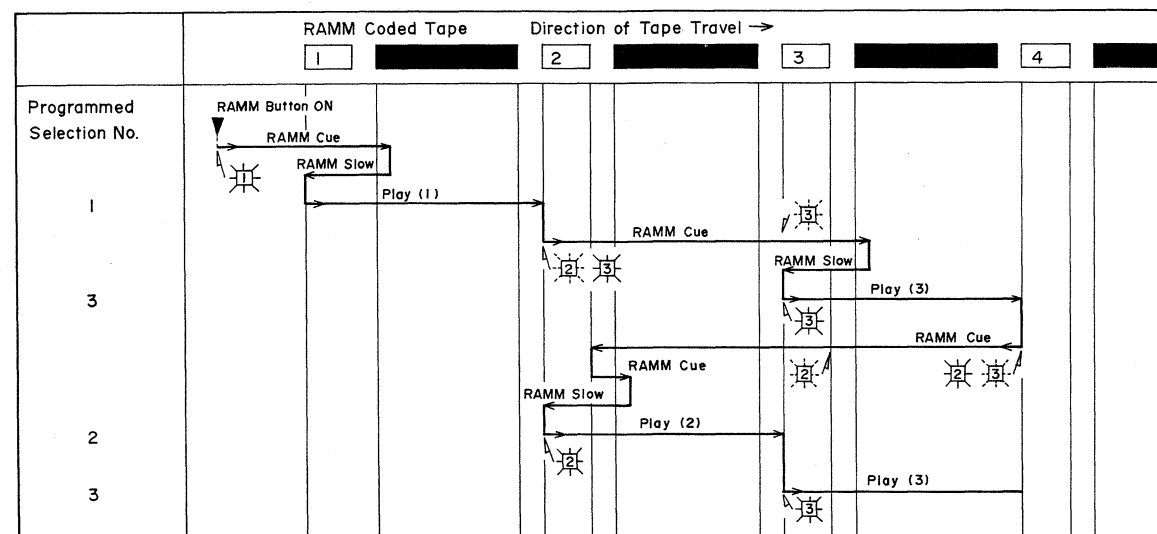


Fig. 9.6



Note: RAMM Code: Eq., Noise Reduction
Selection:

Fig. 9.7

10. EQ. AMP. FREQUENCY RESPONSE

10.1. Playback Frequency Response

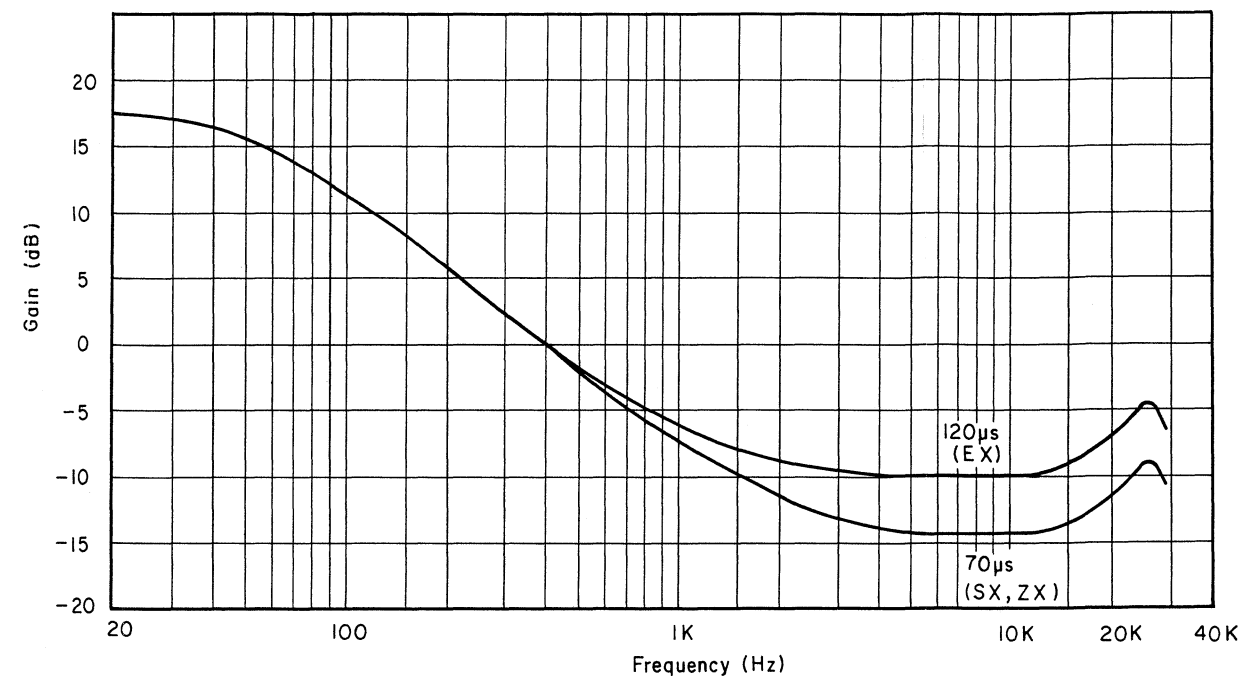


Fig. 10.1

10.2. Record Current Frequency Response

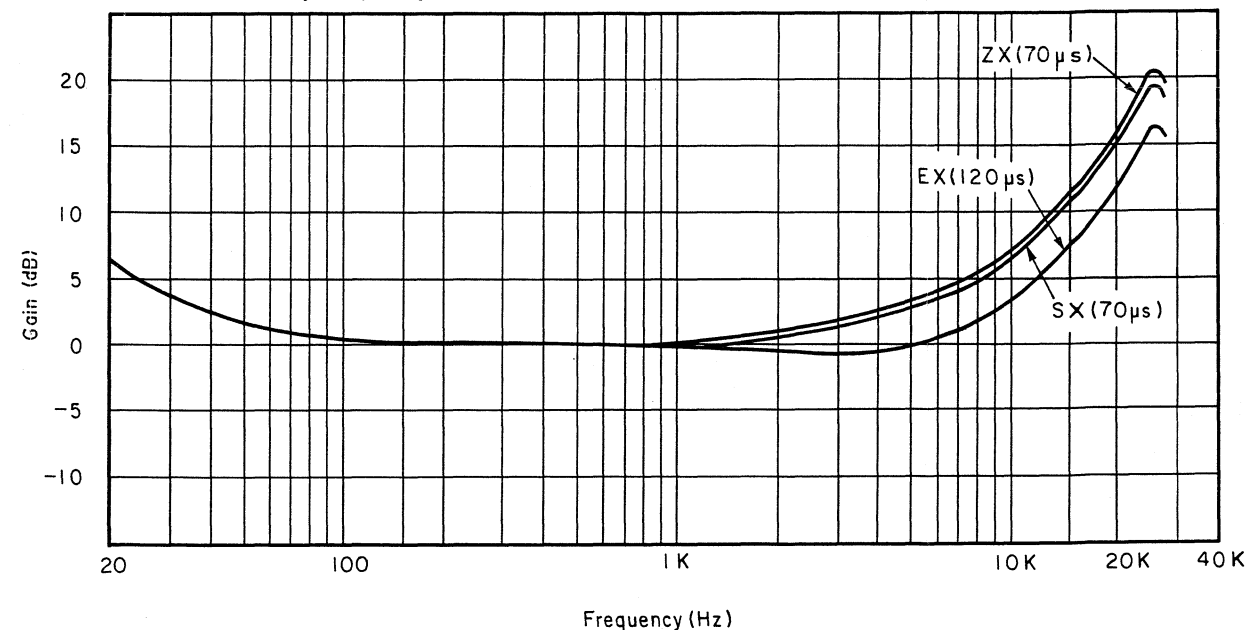


Fig. 10.2

Note: The record current frequency response curve shows the fixed record current frequency response before the auto calibration operation is made in the N-700ZXL without memory back-up batteries.

11. BLOCK DIAGRAMS

11.1. Amplifier and Auto Calibration Control Section

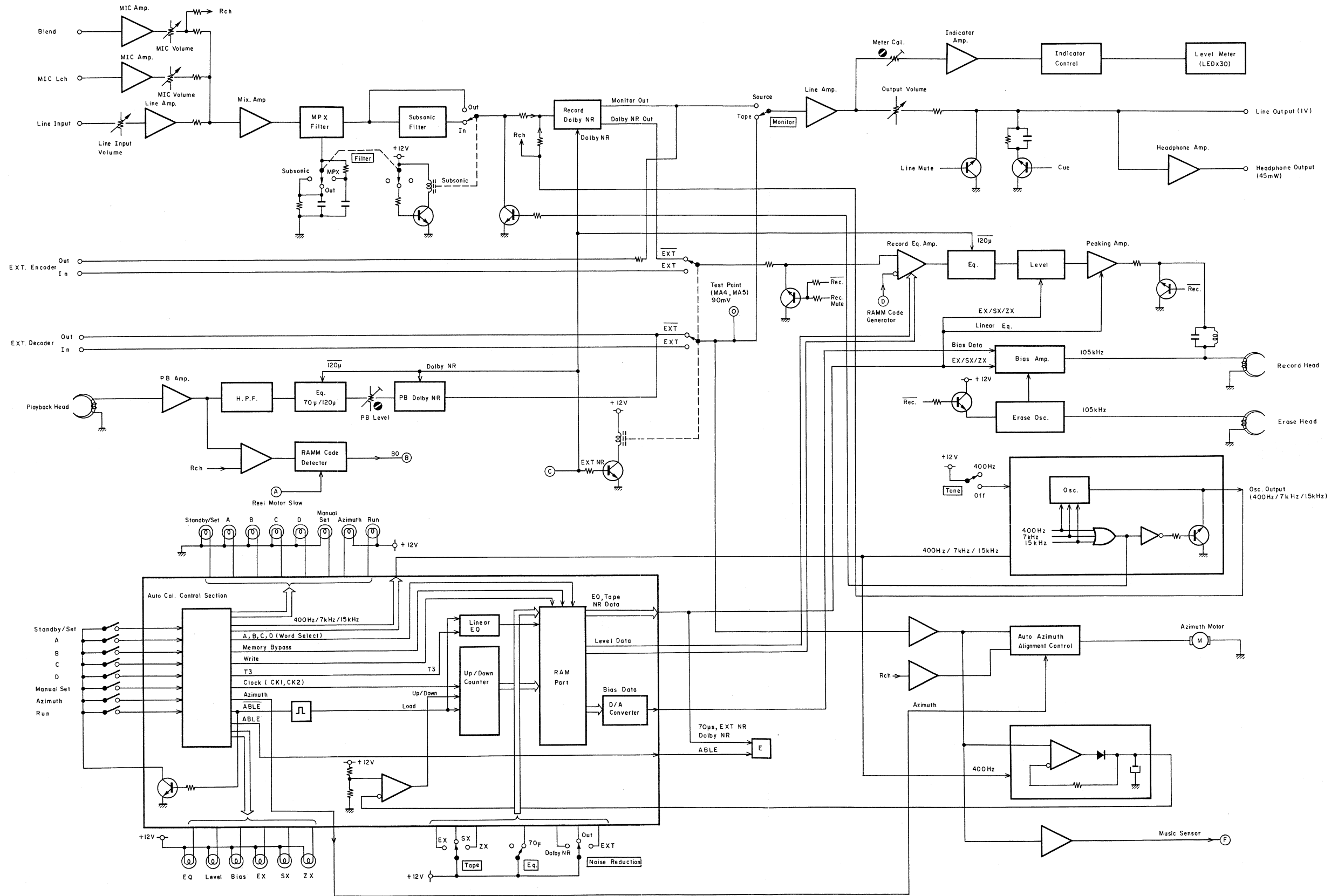


Fig. 11.1

11.2. Mechanism Control and RAMM Control Section

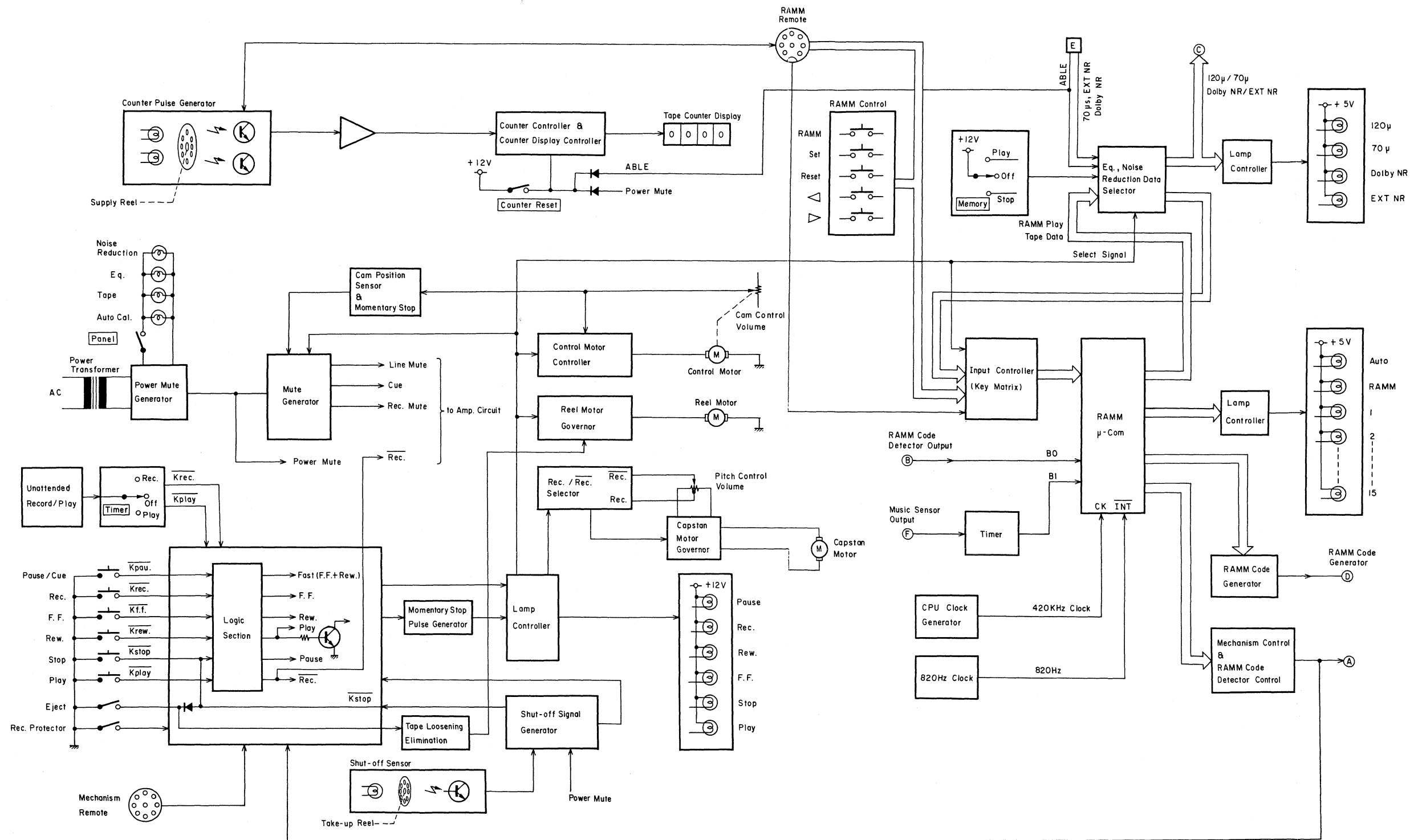


Fig. 11.2

12. WIRING DIAGRAM

Notes: 1. P.C.B. ass'y shows the component side unless otherwise specified.

2. Table of wire colors:

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

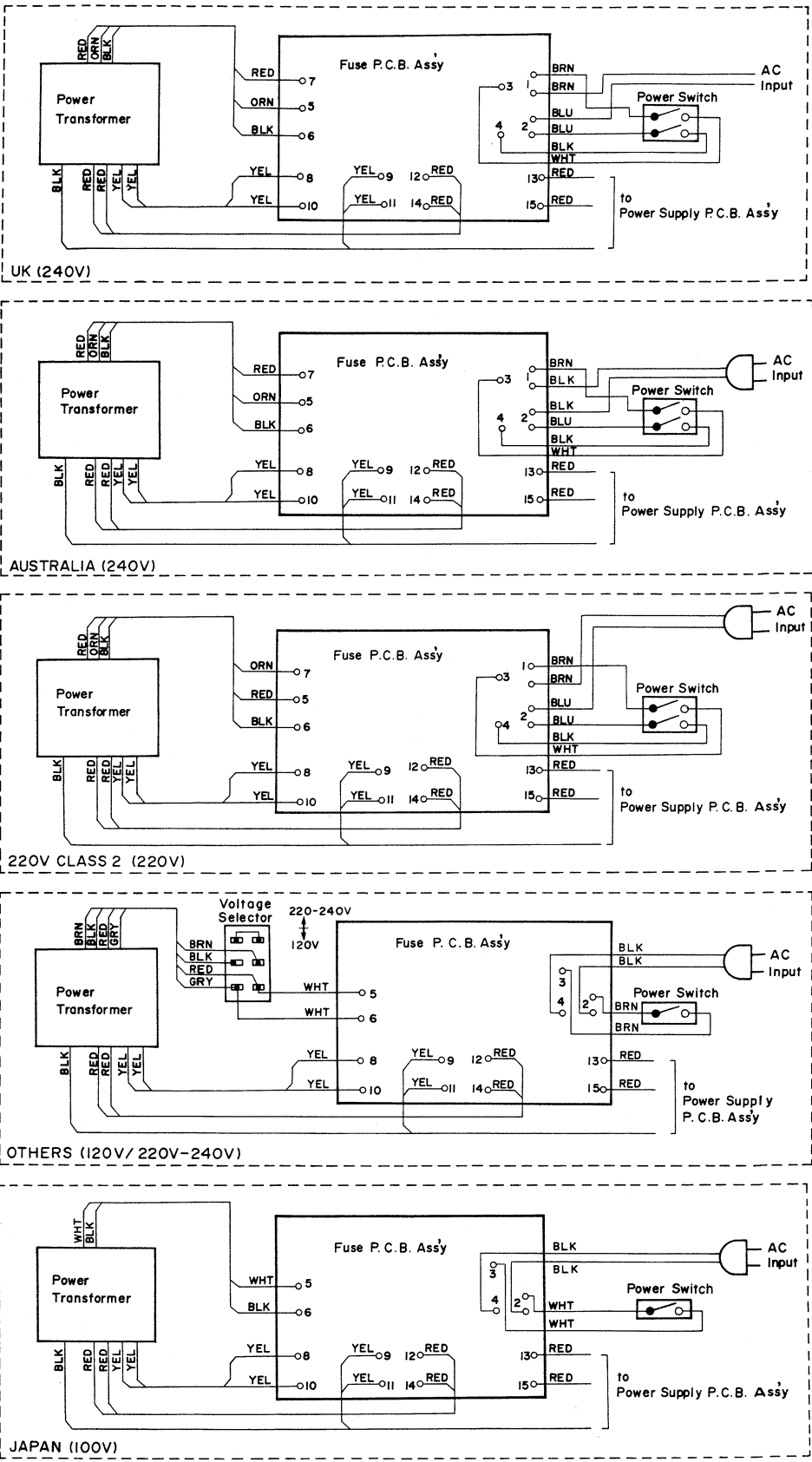


Fig. 12.1

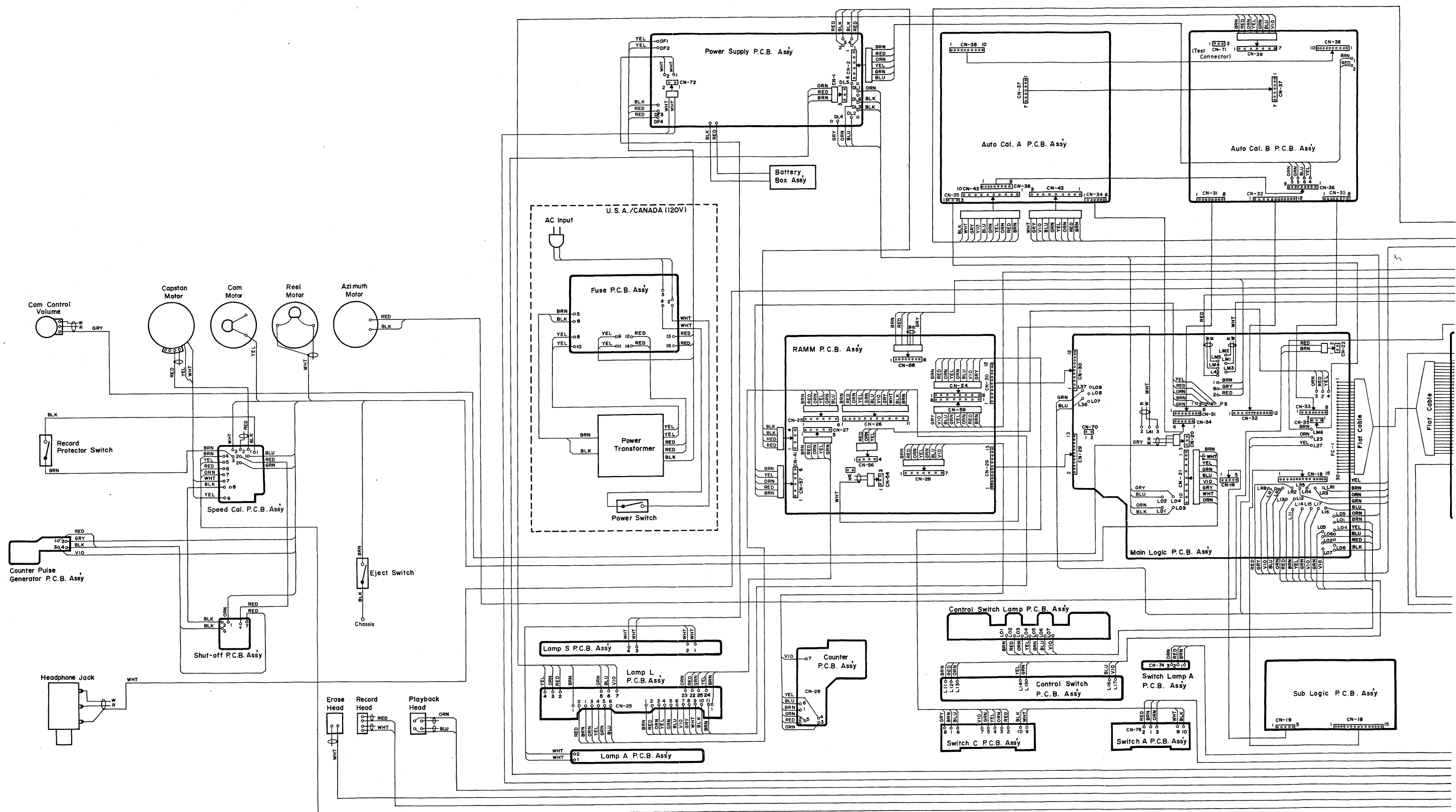


Fig. 12.2

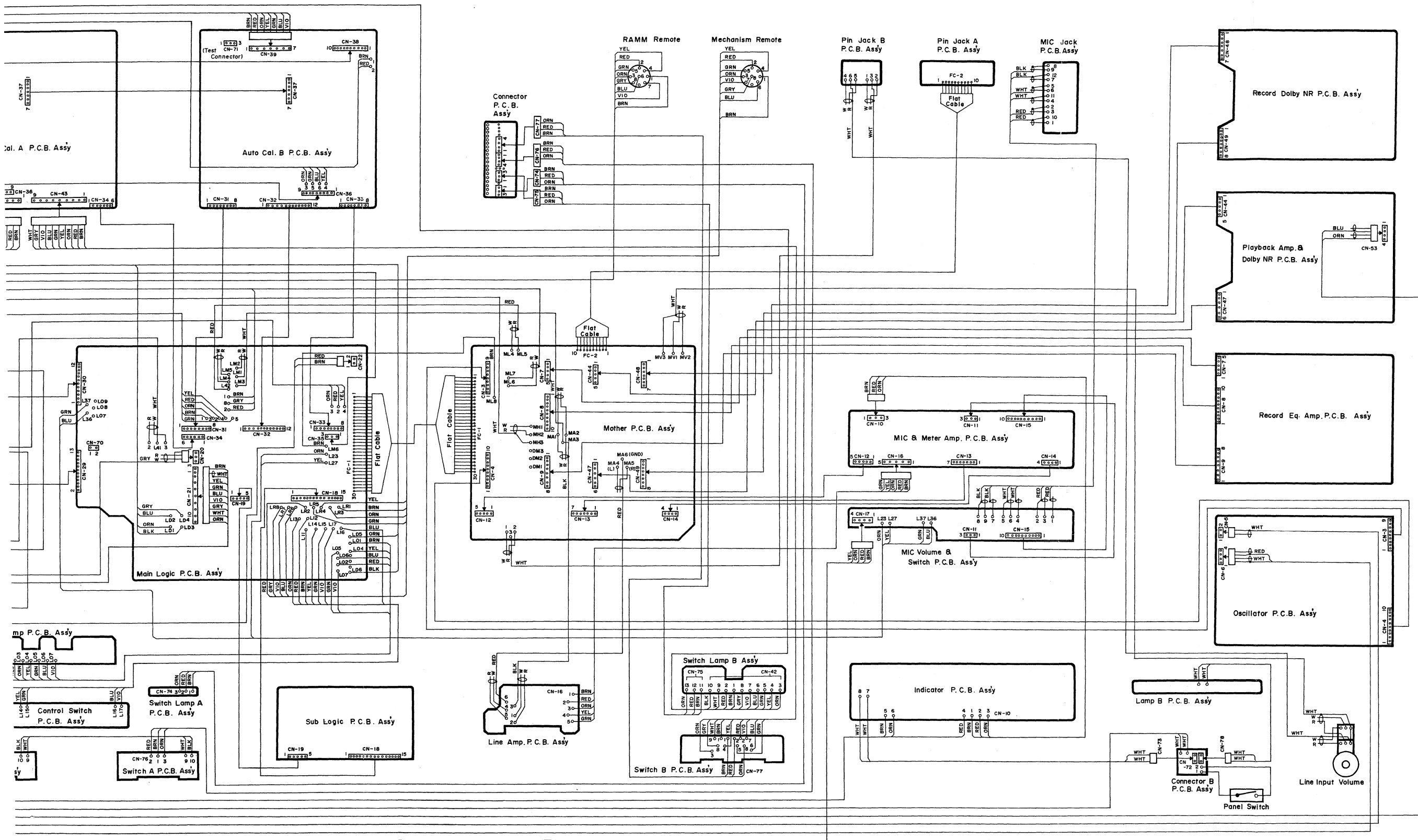


Fig. 12.2

13. SCHEMATIC DIAGRAMS

13.1. Amplifier Section

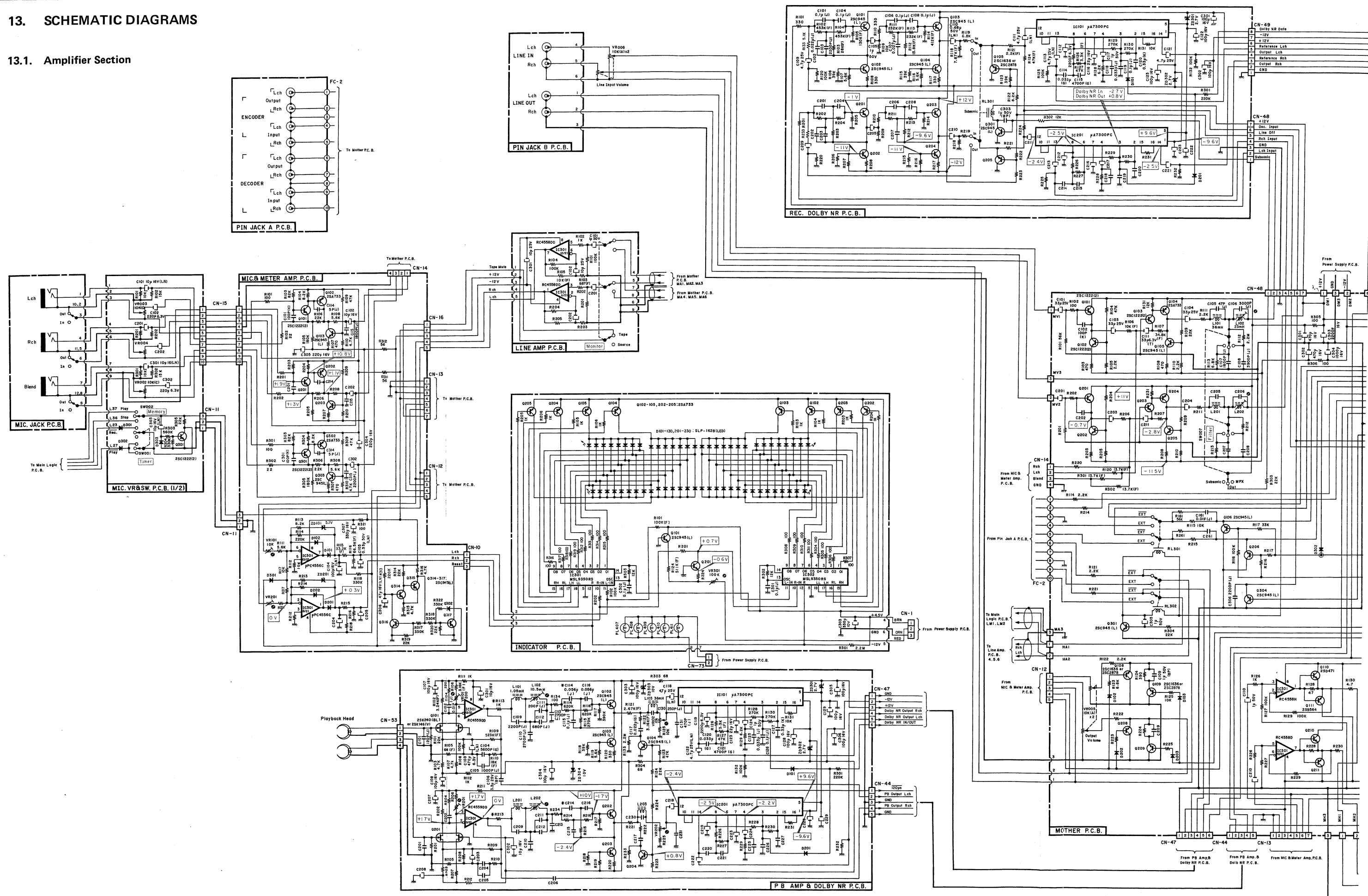
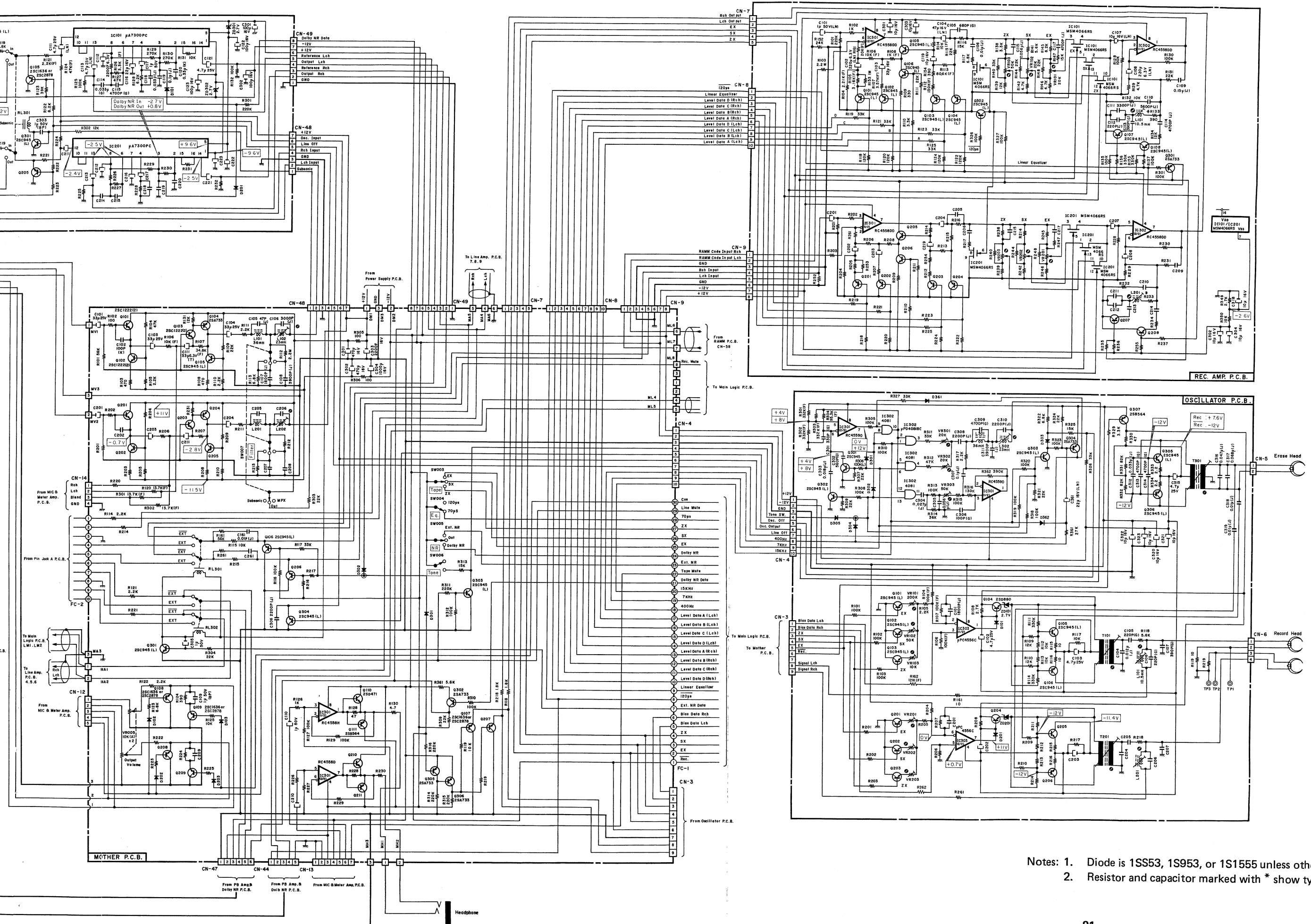


Fig. 13.1

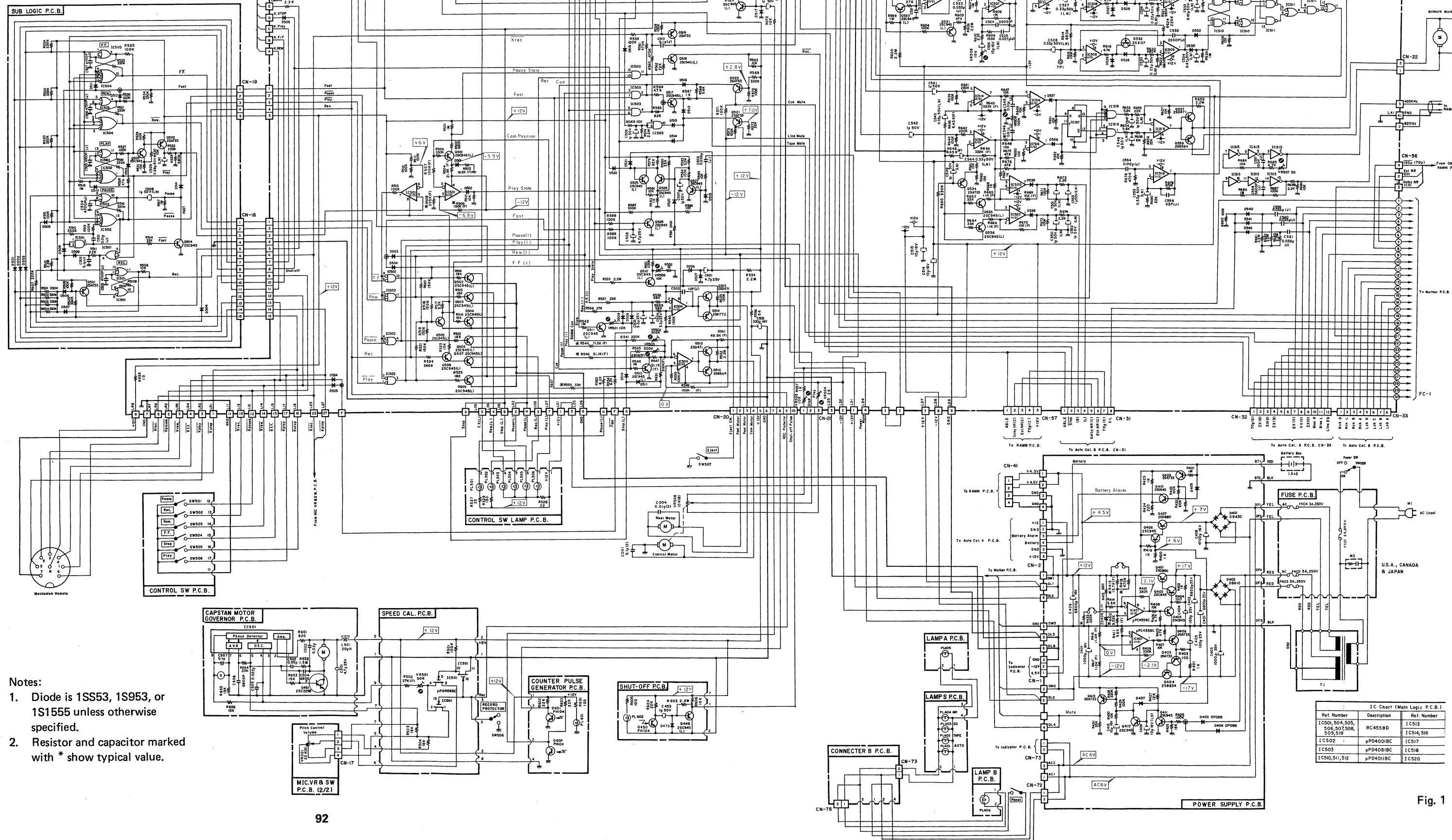


Notes: 1. Diode is 1SS53, 1S953, or 1S1555 unless otherwise specified.
 2. Resistor and capacitor marked with * show typical value.

Fig. 13.1

13.2. Mechanism Control Section

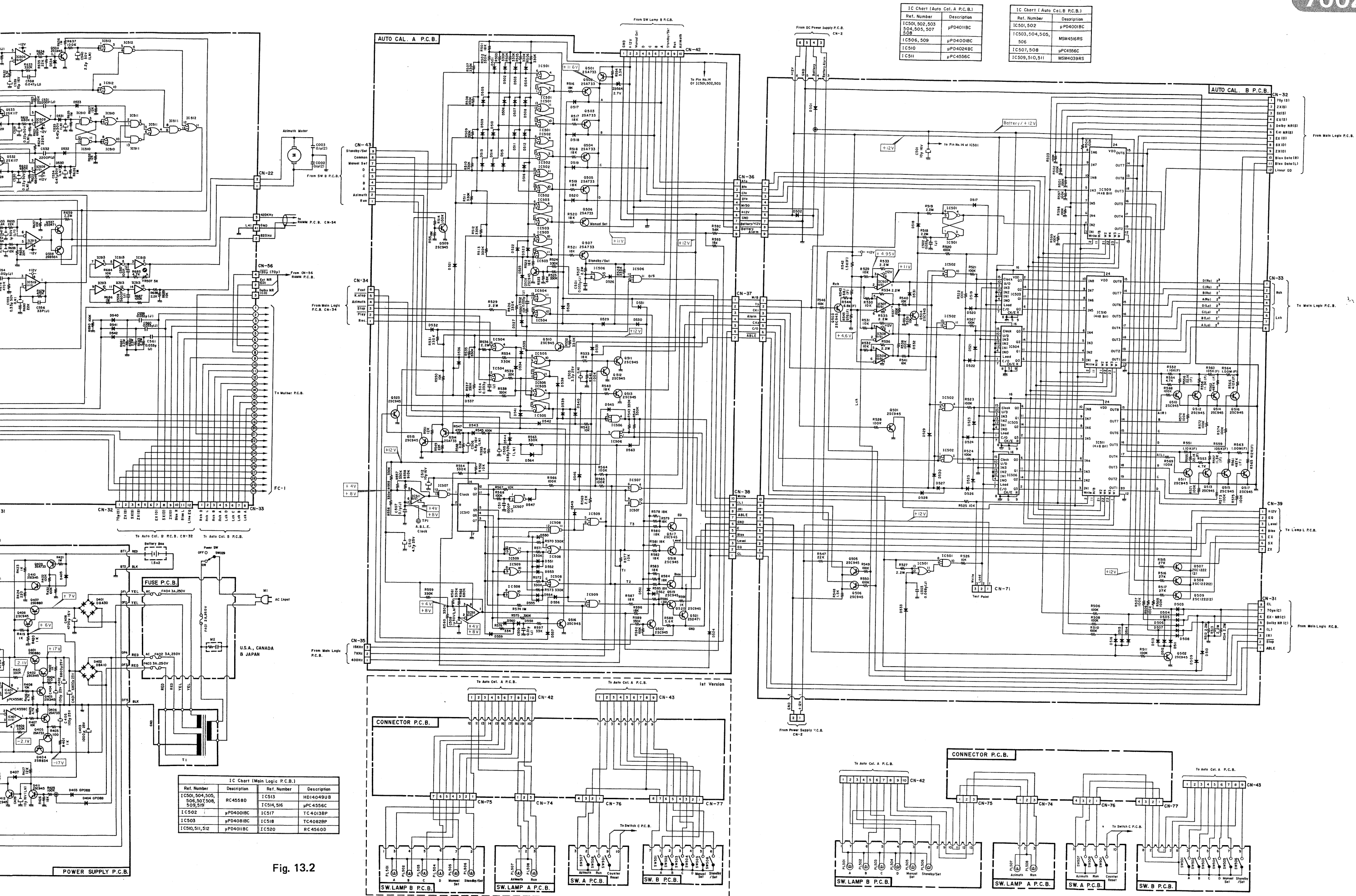
Ref. Number	Description
IC501, 503	μPD4018C
IC502, 504	μPD40128C



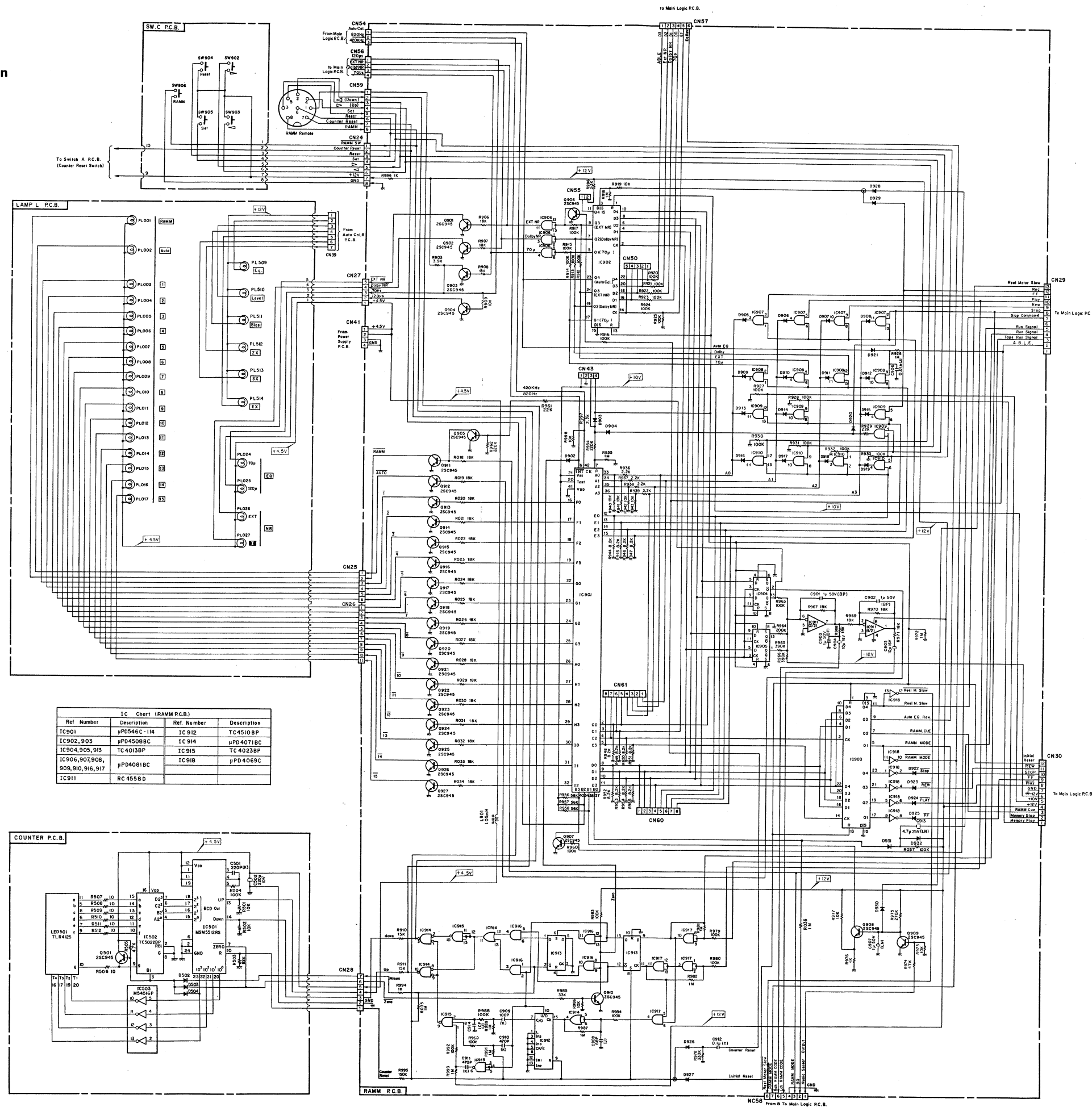
Notes:

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

Ref. Number	Description	Ref. Number
IC501, 504, 505, 506, 507, 508, 509, 510	RC4558D	IC513, IC514, 516
IC502	μPD4001BC	IC517
IC503	μPD4018C	IC518
IC504, 511, 512	μPD4018C	IC520



13.3. RAMM Control Section



Ref Number	IC Chart (RAMM P.C.B.)	Description
IC901	μPD546C-114	IC 912 TC4510BP
IC902, 903	μPD4508BC	IC 914 μPD4071BC
IC904, 905, 913	TC4013BP	IC 915 TC4023BP
IC906, 907, 908, 909, 910, 916, 917	μPD4081BC	IC 918 μPD4069C
IC911	RC4558D	

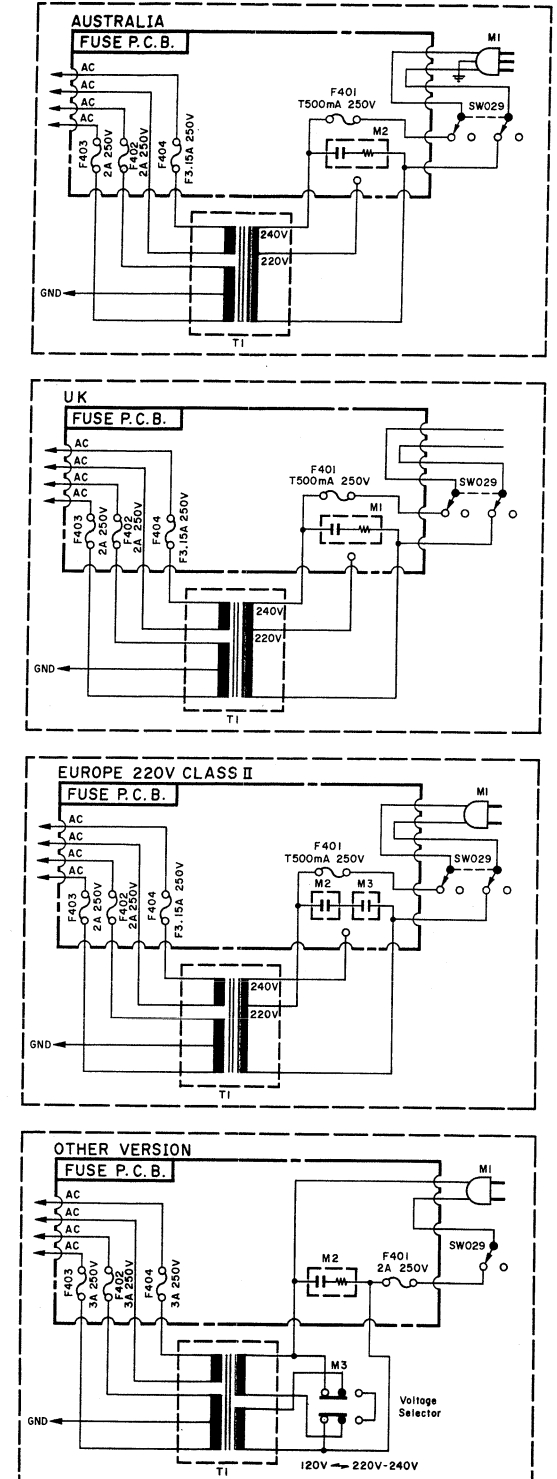


Fig. 13.3

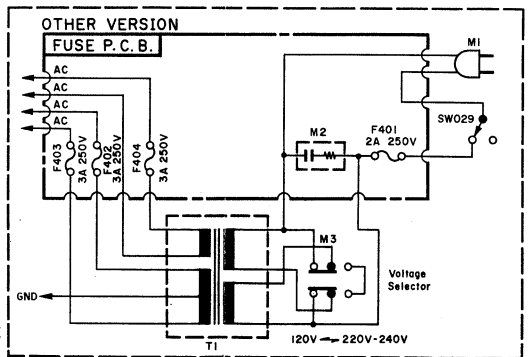
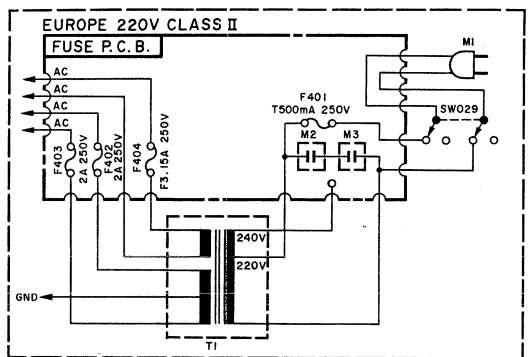
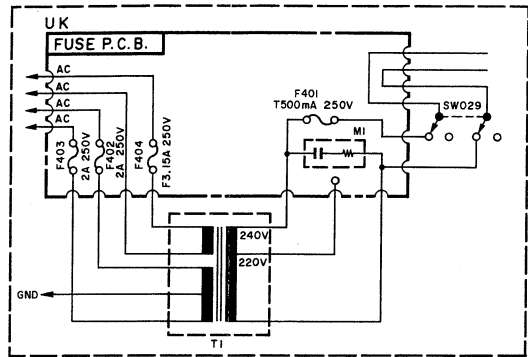
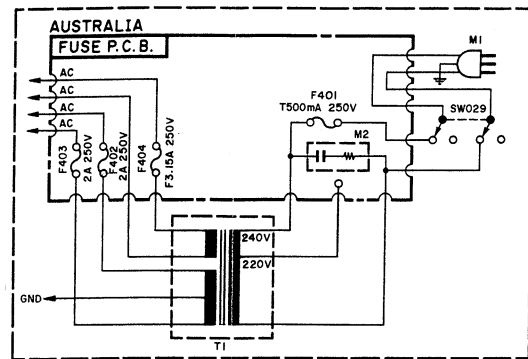


Fig. 13.3

13.4. IC Block Diagrams

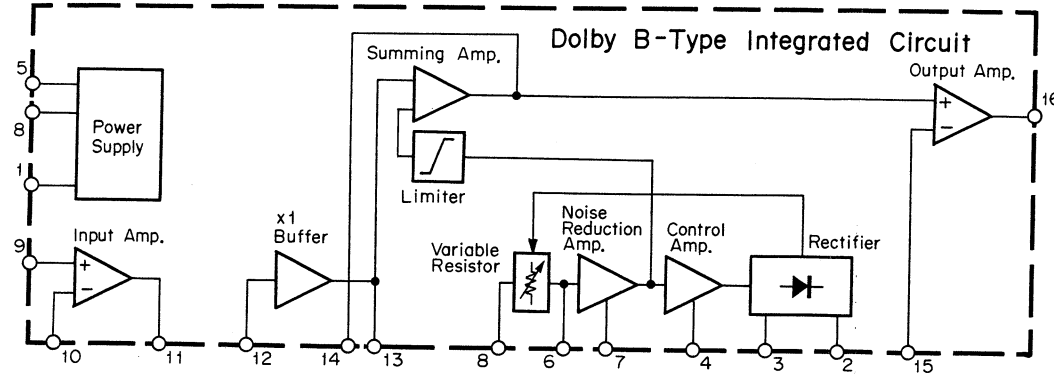


Fig. 13.4 Dolby NR IC $\mu A7300PC$

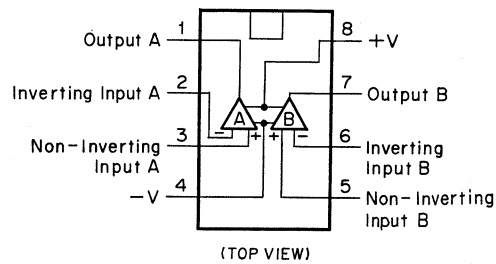


Fig. 13.5 OP Amp. IC 4558, 4559, 4560, 4556

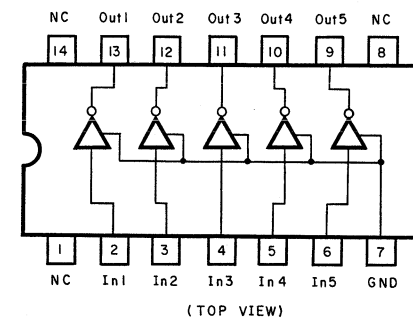


Fig. 13.7 Transistor Array M54516P

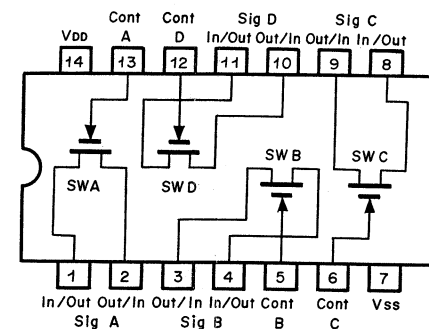


Fig. 13.6 Bilateral Switch C-MOS IC $\mu PD4066C$

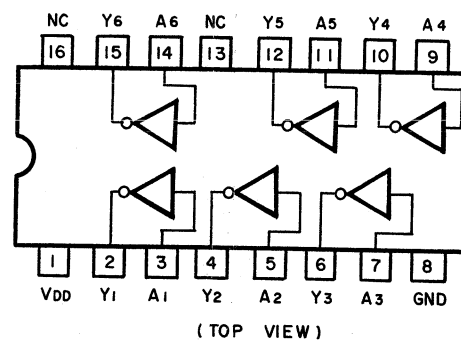


Fig. 13.8 Inverter C-MOS IC HD14049UB

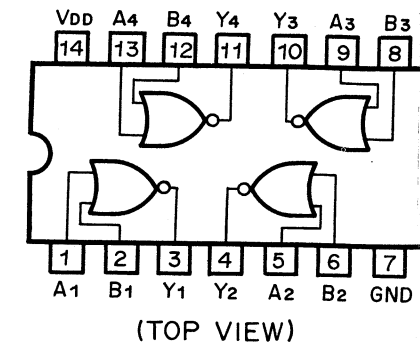


Fig. 13.9 NOR Gate C-MOS IC $\mu PD4001BC$

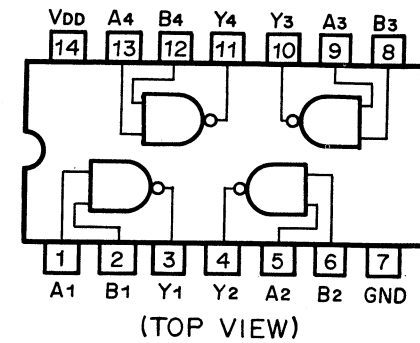


Fig. 13.10 NAND Gate C-MOS IC $\mu PD4011BC$

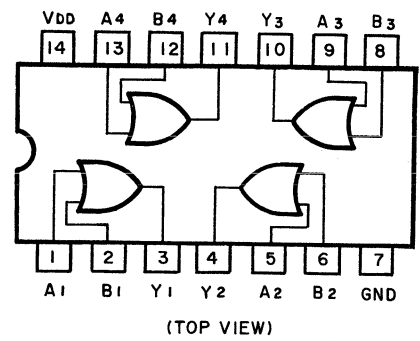


Fig. 13.11 OR Gate C-MOS IC $\mu PD4071BC$

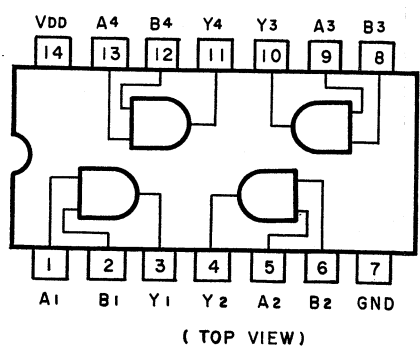


Fig. 13.12 AND Gate C-MOS IC $\mu PD4081BC$

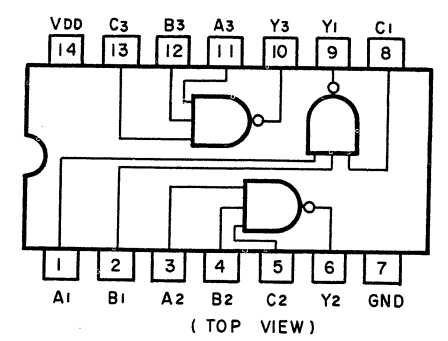


Fig. 13.13 NAND Gate C-MOS IC TC4023BP

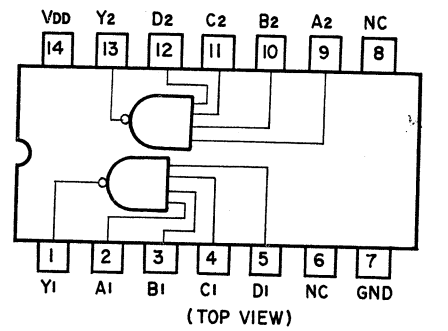


Fig. 13.14 NAND Gate C-MOS IC $\mu PD4012BC$

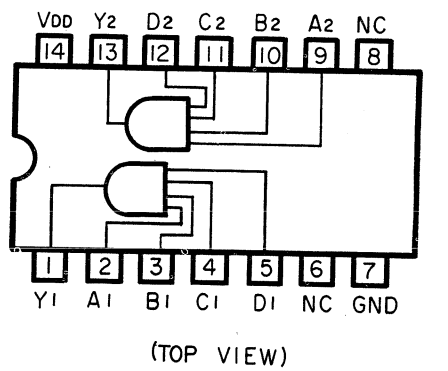


Fig. 13.15 AND Gate C-MOS IC $\mu PD4082BC$

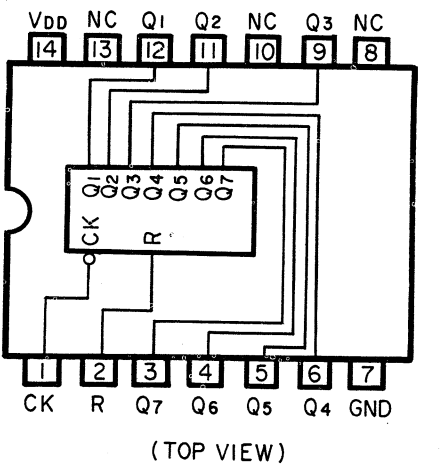


Fig. 13.16 7-Stage Binary Counter C-MOS IC $\mu PD4024BC$

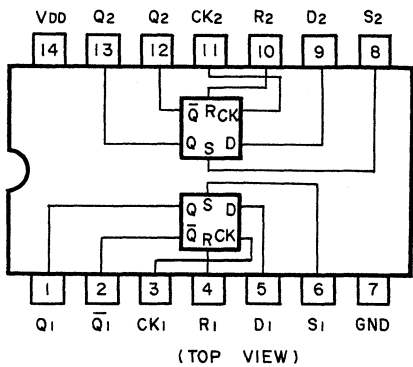


Fig. 13.17 D-Type Flip-Flop C-MOS IC TC4013BP

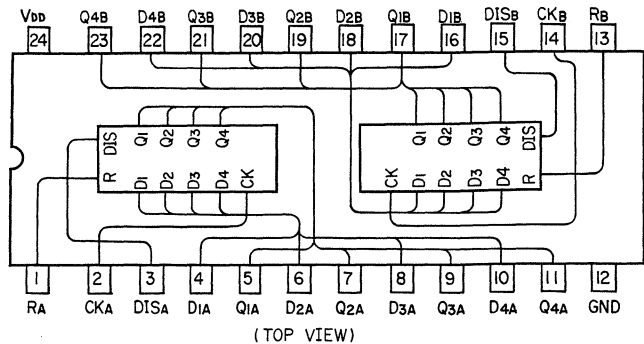


Fig. 13.21 4-Bit Latch C-MOS IC TC4508BP

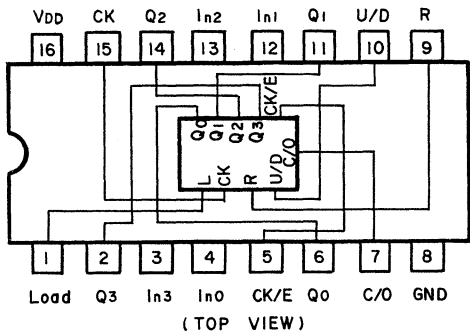


Fig. 13.18 BCD Up/Down Counter C-MOS IC TC4510BP

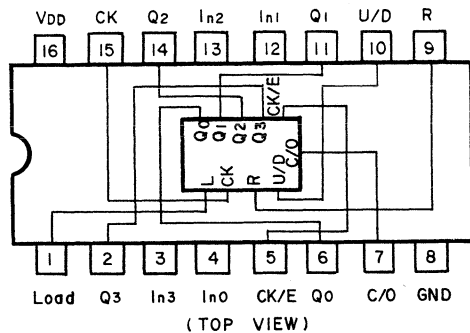


Fig. 13.19 Binary Up/Down Counter C-MOS IC MSM4516RS

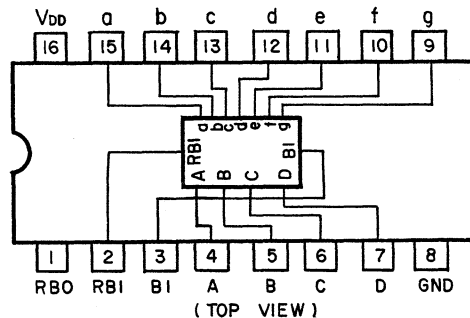


Fig. 13.20 BCD to 7-Segment Decoder/Driver C-MOS IC TC5022BP

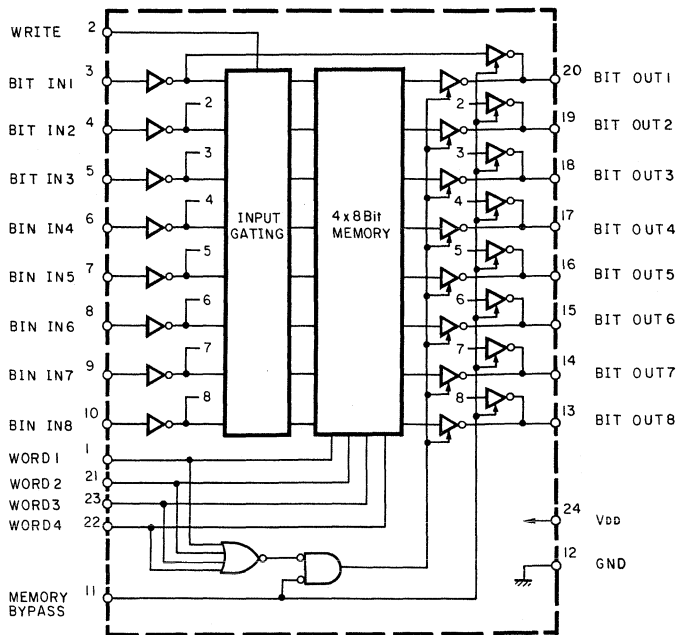


Fig. 13.22 4-Word x 8-Bit Static RAM C-MOS IC MSM4039RS

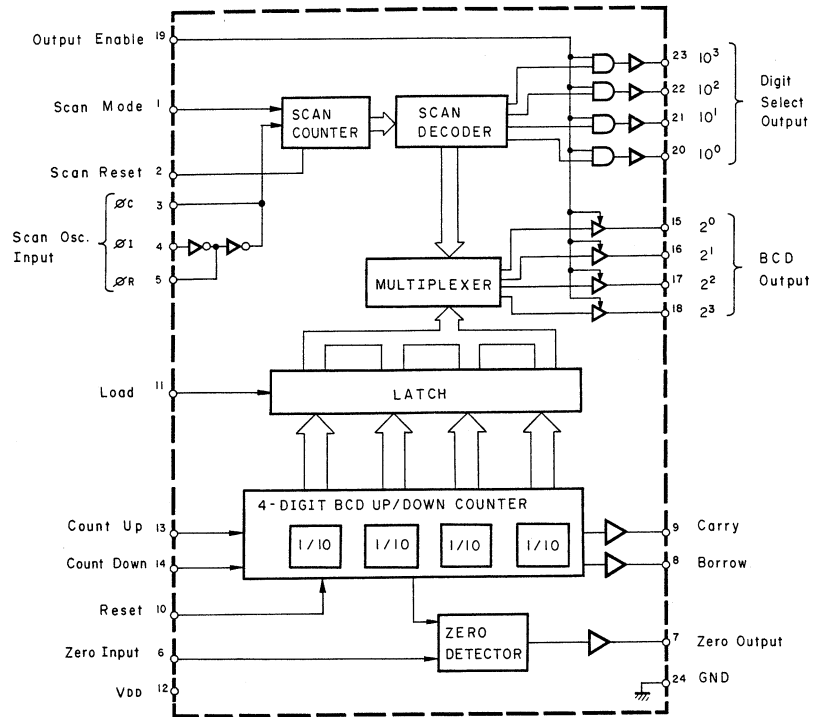


Fig. 13.23 4-Digit BCD Up/Down Counter C-MOS IC MSM5512RS

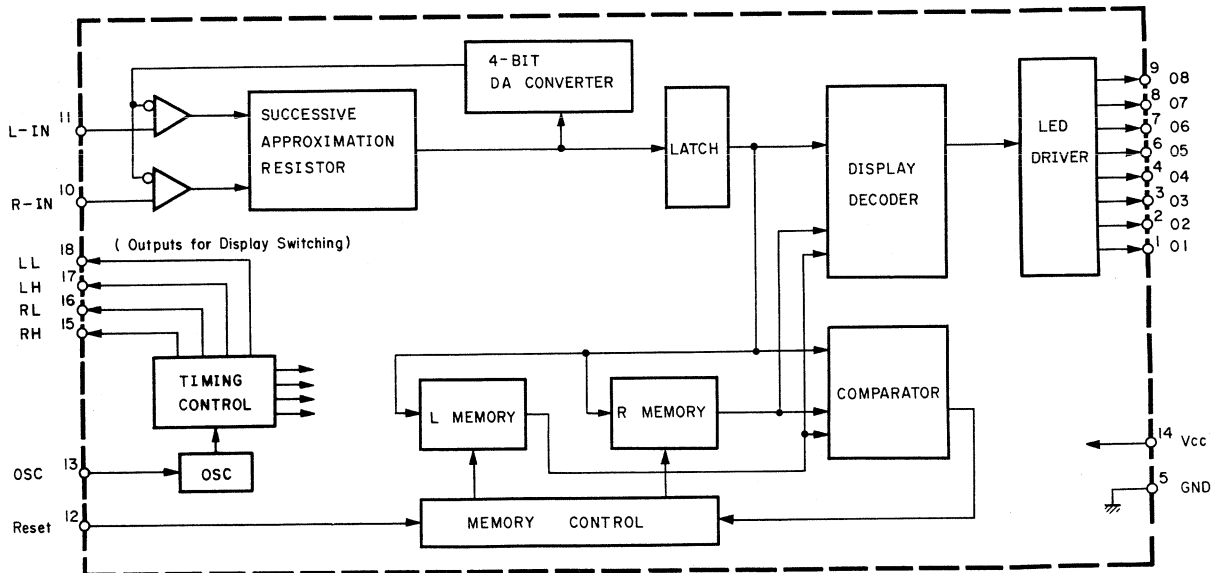
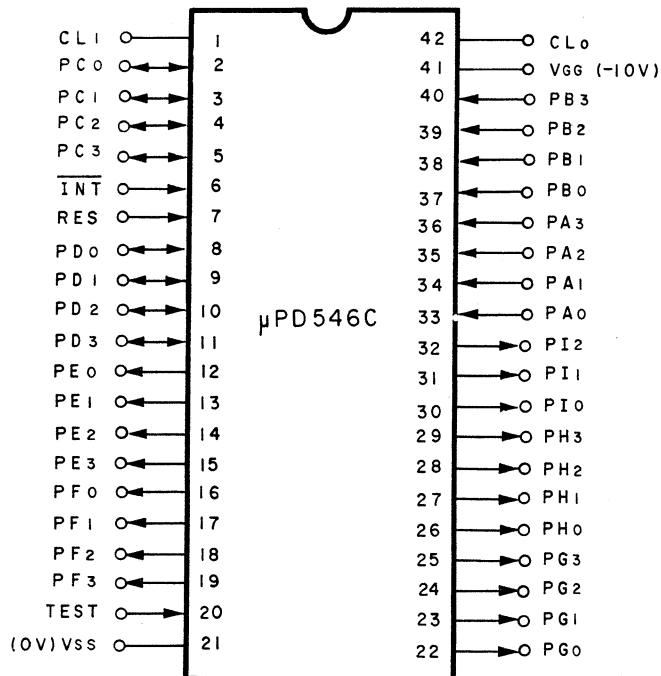


Fig. 13.24 Level Meter Control IC MSL9350RS



(TOP VIEW)

CL_{0,1} : Crystal, inductor, or resistor input
for internal oscillator

$\overline{\text{INT}}$: Interrupt

RES : Reset

PA₃₋₀ : Input port A₃₋₀

PB₃₋₀ : Input port B₃₋₀

PC₃₋₀ : Bidirectional port C₃₋₀

PD₃₋₀ : Bidirectional port D₃₋₀

PE₃₋₀ : Output port E₃₋₀

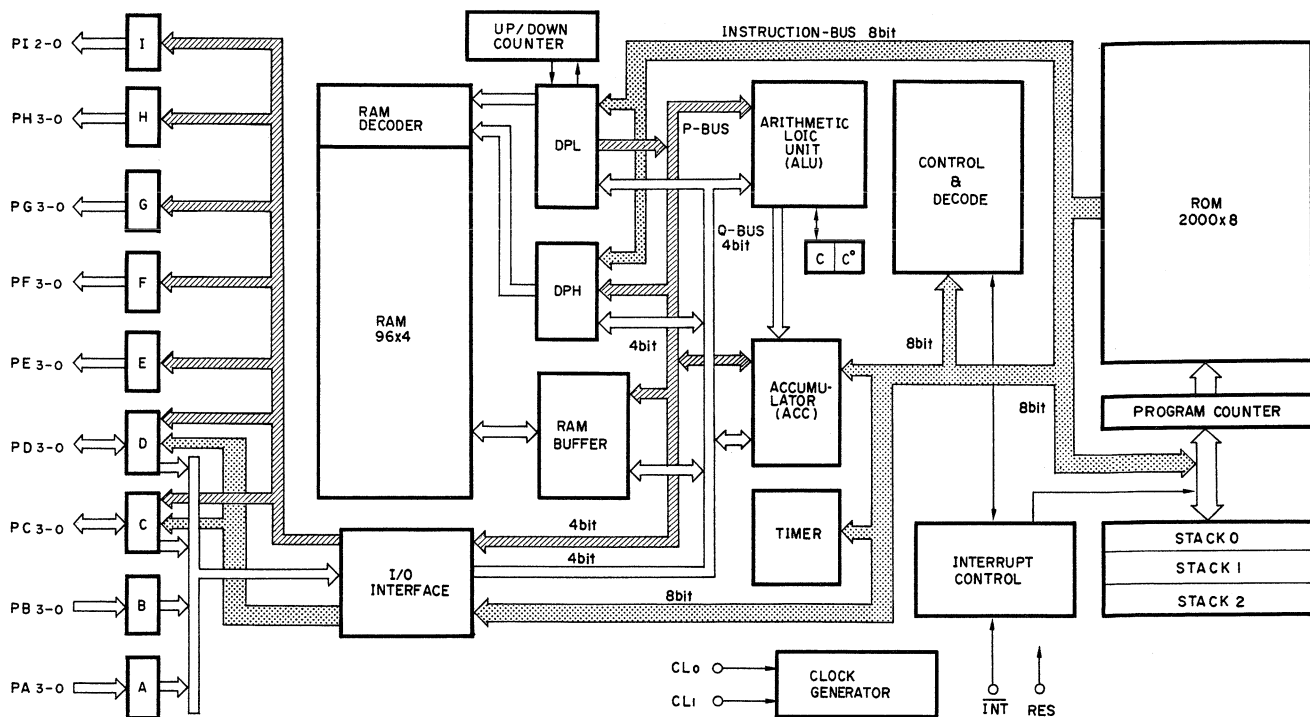
PF₃₋₀ : Output port F₃₋₀

PG₃₋₀ : Output port G₃₋₀

PH₃₋₀ : Output port H₃₋₀

PI₂₋₀ : Output port I₂₋₀

TEST : Test



DP : DATA POINTER
C : CARRY Flip-Flop
C* : CARRY STRAGE Flip-Flop

Fig. 13.25 4-Bit Micro-processor μPD546C-114

14. REMOTE CONTROLLER RM-300 (OPTIONAL)

14.1. Schematic Diagram

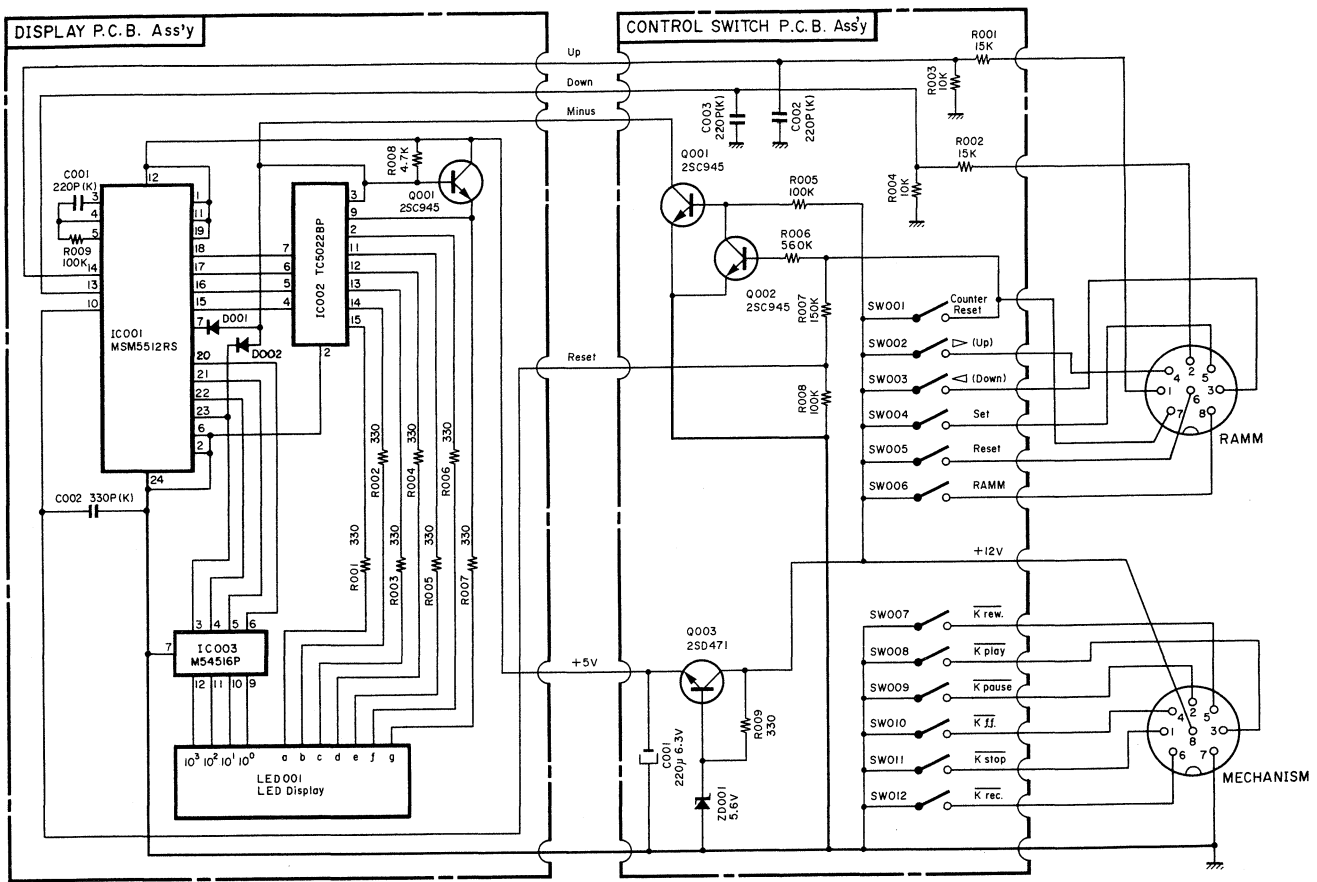


Fig. 14.1

Note: Diode is 1SS53 unless otherwise specified.

14.2. Mounting Diagrams and Parts List

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

(1) Control Switch P.C.B. Ass'y

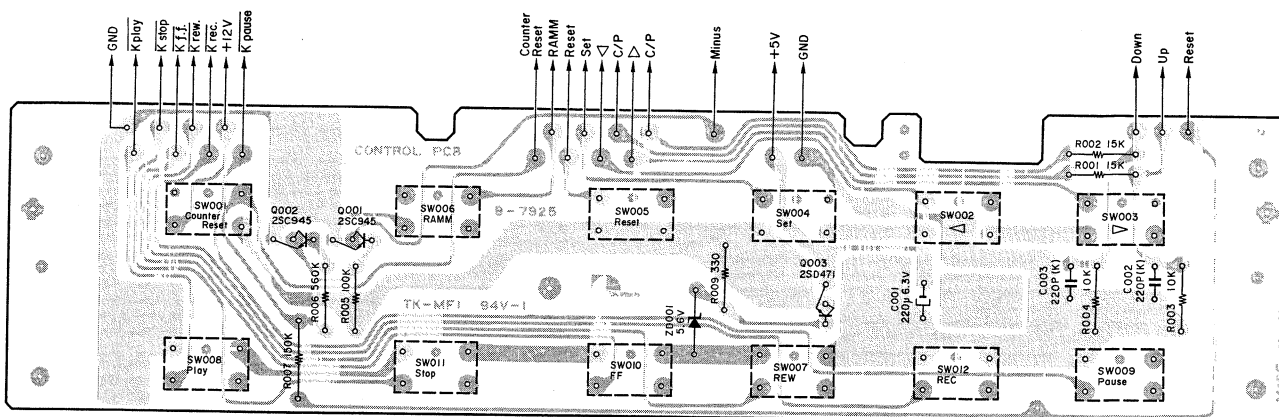


Fig. 14.2

(2) Display P.C.B. Ass'y

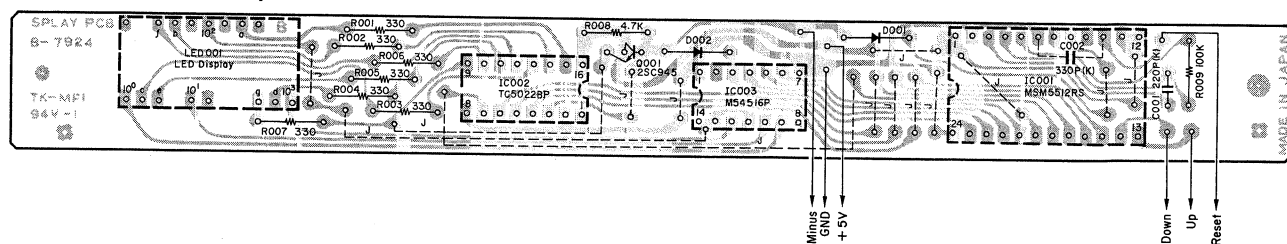


Fig. 14.3

Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04307A	Control Switch P.C.B. Ass'y		BA04306A	Display P.C.B. Ass'y
	0B07925B	Control Switch P.C.B.		0B07924B	Display P.C.B.
Q001,002	0B06100A	Transistor 2SC945 (A)	IC001	0B06259A	IC MSM5512RS
Q003	0B06066A	Transistor 2SD471	IC002	0B06211A	IC TC5022BP
ZD001	0B06290A	Zener Diode 5.6V RD5.6VEB2	IC003	0B06258A	IC M45516P
R001,002	0B01683A	Carbon Resistor 15K ERD-25T J	Q001	0B06100A	Transistor 2SC945 (A)
R003,004	0B01888A	Carbon Resistor 10K ERD-25T J	D001,002	0B06181A	Silicon Diode 1SS53
R005	0B01889A	Carbon Resistor 100K ERD-25T J	R001-007	0B05577A	Carbon Resistor 330 ERD-25T J (7 pcs.)
R006	0B05784A	Carbon Resistor 560K ERD-25T J	R008	0B01846A	Carbon Resistor 4.7K ERD-25T J
R007,008	0B05626A	Carbon Resistor 150K ERD-25T J	R009	0B01889A	Carbon Resistor 100K ERD-25T J
R009	0B05577A	Carbon Resistor 330 ERD-25T J	C001	0B09283A	Ceramic Capacitor 220P 50V K
C001	0B09151A	Electrolytic Capacitor 220μ 6.3V	LED001	0B06289A	LED Display Unit
C002,003	0B09283A	Ceramic Capacitor 220P 50V K		QJ 04237A	Counter Himelon (1 pce.)
SW001-012	0B07354A	Push Switch KHG10901 (12 pcs.)			

14.3. Mechanism Ass'y and Parts List

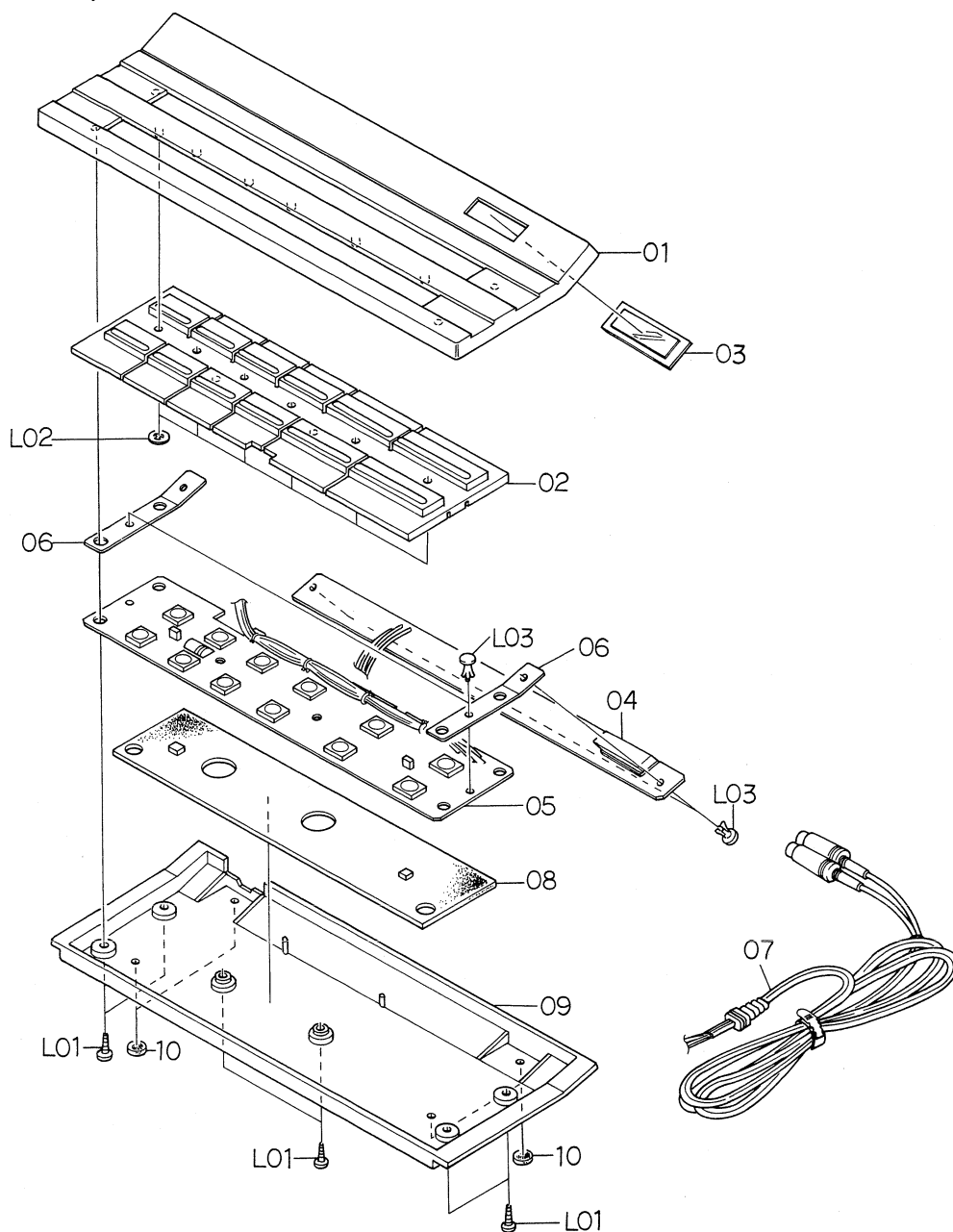


Fig. 14.4

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
		RM-300 Mechanism Ass'y					
01	0H03917A	Top Case	1		0B08831A	Cord Stopper	(1)
02	0H03918A	Switch Knob	1		0B08496A	8P DIN Plug (RAMM)	(1)
03	0H03922A	Counter Lens	1		0B08585A	8P DIN Plug (Mechanism)	(1)
04	BA04306A	Display P.C.B. Ass'y	1	08	0J04287A	Bottom Case Rubber	1
05	BA04307A	Control Switch P.C.B. Ass'y	1	09	0H03918A	Bottom Case	1
06	0J04266A	P.C.B. Holder	2	10	0H03920A	Leg	4
07	BA04309A	Remote Cord Ass'y	1	L01	0E00938A	BT Screw M3x8 Philips Binding Head (Black Chromate)	6
	0B08827A	Cord Bushing	(1)	L02	0E00252A	Stopper Ring CS 3mm	6
	0B08828A	8Px2 Cord	(1)	L03	0B08539A	Plastic Rivet	4

15. SPECIFICATIONS

Power Source	100, 120, 120/220-240, 220 or 240 V AC ; 50/60 Hz (According to country of sale)
Power Consumption	65 W max.
Tape Speed	1-7/8 ips (4.75 cm/sec)
Wow and Flutter	Less than 0.04% Wrms Less than 0.08% Wpeak
Frequency Response (w. auto calibration)	20-20,000 Hz ± 1.5 dB (Nakamichi EX, EXII, SX, ZX tape) 18-24,000 Hz ± 3 dB (Recording level -20 dB)
Signal to Noise Ratio	Better than 66 dB (3% THD) Better than 60 dB (0 dB) (IHF-A, Wrms, 400 Hz, w. Dolby NR, ZX tape, 70 μ sec)
Total Harmonic Distortion	Less than 0.8% (ZX tape) Less than 1.0% (SX, EXII tape) (400 Hz, 0 dB)
Erase	Better than 60 dB (100 Hz)
Separation	Better than 37 dB (1 kHz, 0 dB)
Crosstalk	Better than 60 dB (1 kHz, 0 dB)
Bias Frequency	105 kHz
Input (Line)	50 mV, 50 k ohms
(Microphone)	0.2 mV, 10 k ohms
(Noise Reduction)	100 mV, 50 k ohms
Output (Line)	1 V (400 Hz, 0 dB, output control at max.)
(Headphone)	45 mW (400 Hz, 0 dB, output control at max.)
(Noise Reduction)	100 mV, 2.2 k ohms
Dimensions	500 (W) x 262 (H) x 250 (D) millimeters 19-11/16 (W) x 10-5/16 (H) x 9-27/32 (D) inches
Approximate Weight	14 kg 30 lb. 14 oz

- Specifications and appearance design are subject to change for further improvement without notice.
- Dolby NR under license from Dolby Laboratories.
- The word "DOLBY" and the Double-D-Symbol are trademarks of Dolby Laboratories.
- The High-Com has been manufactured under license from AEG-TELEFUNKEN.
- High-Com is the trademark of AEG-TELEFUNKEN.
- Nakamichi Corporation has the right to manufacture and sell High-Com II throughout the world.