

NAKAMICHI

682ZX

MODEL

SERVICE MANUAL

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1. GENERAL

1.1. Control Functions

The Nakamichi 682ZX control functions are shown below:

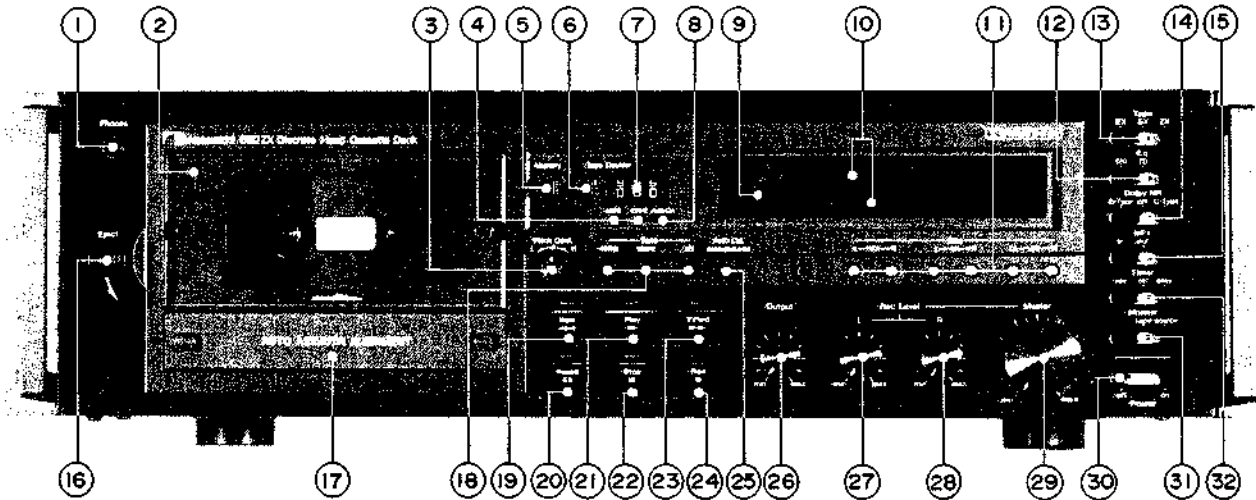


Fig. 1.1 Front View

- | | |
|---------------------------------------|--------------------------------|
| 1. Headphone Jack | 17. Alignment Screw Cover |
| 2. Cassette Holder | 18. Test Tone Switch |
| 3. Pitch Control | 19. Rewind Button |
| 4. Test Tone Indicator | 20. Pause Button |
| 5. Tape Start Memory Switch | 21. Play Button |
| 6. Counter Reset Button | 22. Stop Button |
| 7. Tape Counter | 23. Fast-Forward Button |
| 8. Auto Calibration Indicator | 24. Record Button |
| 9. RAMM Display | 25. Auto Calibration Button |
| 10. Fluorescent (FL) Level Indicators | 26. Output Level Control |
| 11. Bias Adjustment Controls | 27. Input Level Control (L ch) |
| 12. Eq. Switch | 28. Input Level Control (R ch) |
| 13. Tape Switch | 29. Master Input Level Control |
| 14. Dolby NR Switch | 30. Power Switch |
| 15. MPX Filter Switch | 31. Monitor Switch |
| 16. Eject Lever | 32. Timer Switch |

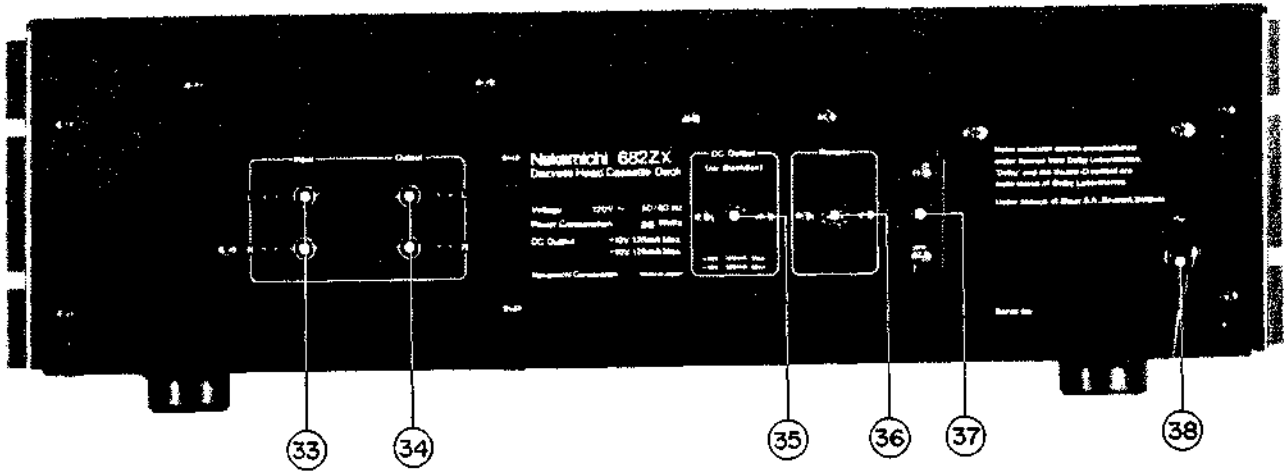


Fig. 1.2 Rear View

- 33. Input Jacks
- 34. Output Jacks
- 35. DC Output Jacks
- 36. Remote Control Jack
- 37. Voltage Selector
- 38. Power Cord

1.2. Voltage Selector

Voltage selector is installed on the rear panel for Other Version of the Nakamichi 682ZX. This voltage selector can select either 120 V or 220-240 V at customer's disposal.

2. REMOVAL PROCEDURES

2.1. Side Panel Ass'y

Refer to Fig. 2.1.

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

2.2. Top Cover Ass'y

Refer to Fig. 2.1.

- (1) Remove Side Panel Ass'y referring to item 2.1.
- (2) Remove F04 and F05, then disassemble F06 (Top Cover Ass'y).

2.3. Bottom Cover Ass'y

Refer to Fig. 2.1.

- (1) Remove F07, then disassemble F08 (Bottom Cover Ass'y).

2.4. Cassette Case Cover Ass'y and Azimuth Alignment Cover Ass'y

Refer to Fig. 2.1.

- (1) Turn fully counterclockwise 2 screws which are mounted on the Cassette Case Cover, then disassemble F09 (Cassette Case Cover Ass'y).
- (2) Turn fully counterclockwise 2 screws which are mounted on the Front Panel Escutcheon Ass'y, then disassemble F10 (Azimuth Alignment Cover Ass'y).

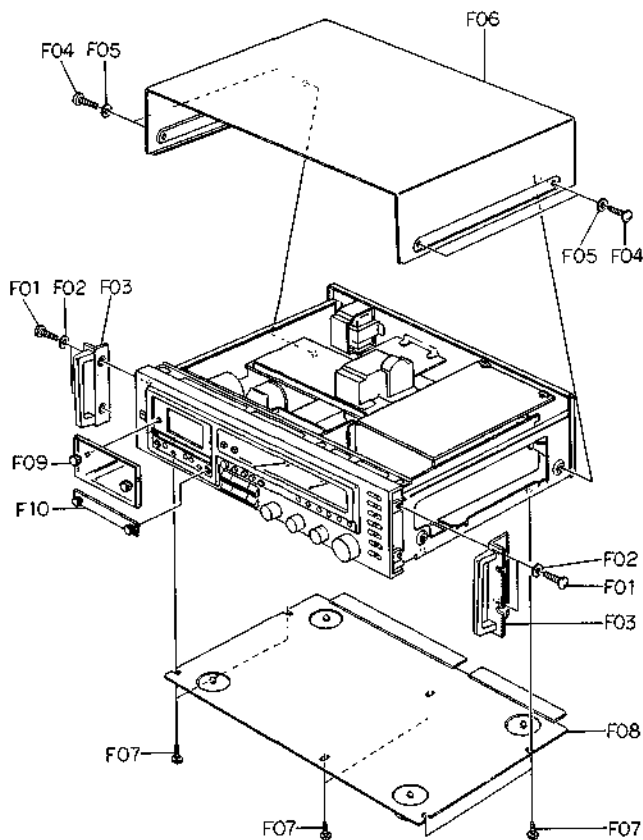


Fig. 2.1

2.5. Front Panel 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 2.2 and 2.3.
- (2) Remove F01, then disassemble F02 (Dolby NR P.C.B. Ass'y).
- (3) Remove F03, then turn F04 (Auto Level P.C.B. Ass'y) over as an arrow head.
- (4) Pull out F05 (Volume Knob A), F06 (Volume Knob B) and F07 (Pitch Control Knob).
- (5) Remove F08, F09 and F10, then disassemble F11 (Front Panel Ass'y including 3 connectors).

2.6. Headphone Jack Ass'y

Refer to Fig. 2.2.

- (1) Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F12, then disassemble F13 (Headphone Jack Ass'y).

2.7. Mechanism Ass'y

Refer to Fig. 2.2.

- (1) Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F14, then disassemble F15 (Mechanism Ass'y including 6 connectors).

2.8. FL Indicator Ass'y and FL Indicator 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 F01, then disassemble F02 (FL Indicator Ass'y including 1 connector).
- (3) Remove F03 (FL Indicator Hold Plate) and F04 (Indicator P.C.B. Plate), then disassemble F05 (FL Indicator Holder L), F06 (FL Indicator Holder R) and F07 (FL Indicator P.C.B. Ass'y).

2.9. Auto Level 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 1 connector and the wires connected by wrapping from F09 (Auto Level P.C.B. Ass'y).
- (3) Remove F08, then disassemble F09 (Auto Level P.C.B. Ass'y) by releasing the self-interlocking pin of the P.C.B. supporters.

2.10. Auto Level Motor Ass'y

Refer to Fig. 2.3.

- (1) Remove Auto Level P.C.B. Ass'y referring to item 2.9.
- (2) Remove F10, then disassemble F11 (Auto Level Motor Ass'y).
- (3) Remove F12, then disassemble F13 (Auto Level Motor).
- (4) Remove F14, then disassemble F15 (Assembly of Volume Holder and Volume 10 k Ω) and F16 (As-

sembly of Motor Belt, Drive Pulley, Drive Pulley Shaft and Volume Drive Jointer).

- (5) Remove F17, then disassemble F18 (Volume 10 kΩ including 2 connectors).

2.11. Logic P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Remove Auto Level P.C.B. Ass'y referring to item 2.9.
- (2) Remove 5 connectors and the wires connected by wrapping from F20 (Logic P.C.B. Ass'y).
- (3) Remove F19, then disassemble F20 (Logic P.C.B. Ass'y).

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

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y referring to item 2.2.
- (2) Remove 2 connectors and wires connected by wrapping from F22 (Dolby NR P.C.B. Ass'y).
- (3) Remove F21, then disassemble F22 (Dolby NR P.C.B. Ass'y).

2.13. Switch 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) Pull out F23 (Function Switch Knob Ass'y).
- (3) Remove the wires connected by wrapping from F26 (Switch P.C.B. Ass'y).
- (4) Remove F24 and F25, then disassemble F26 (Switch P.C.B. Ass'y).

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

Refer to Fig. 2.3.

- (1) Remove Dolby NR P.C.B. Ass'y and Switch P.C.B. Ass'y referring to items 2.12 and 2.13.
- (2) Remove flat cables, 3 connectors and wires connected by wrapping from F30 (Main P.C.B. Ass'y).
- (3) Remove F27, F28 and F29, then disassemble F30 (Main P.C.B. Ass'y).

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

Refer to Fig. 2.3.

- (1) Remove FL Indicator Ass'y referring to item 2.8.
- (2) Remove F31 and a flat cable, then disassemble F32 (Volume P.C.B. Ass'y).

2.16. Bias Cal. 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 F33, then disassemble F34 (Bias Cal. Ass'y).
- (3) Remove F35, then disassemble F36 (Bias Cal. P.C.B. Ass'y).

2.17. Power Switch

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Front Panel Ass'y referring to item 2.5.
- (2) Remove F37, then disassemble F38 (Power Switch Knob).

- (3) Remove F39, then disassemble F40 (Power Switch Holder Ass'y).
- (4) Remove F41, then disassemble F42 (Power Switch).

2.18. Lamp P.C.B. B Ass'y and Lamp P.C.B. C 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 F43, then disassemble F44 (Insulator) and F45 (Lamp P.C.B. B Ass'y).
- (3) Remove F46 (Lamp P.C.B. C Ass'y) by releasing the self-interlocking pin of the Reflector.

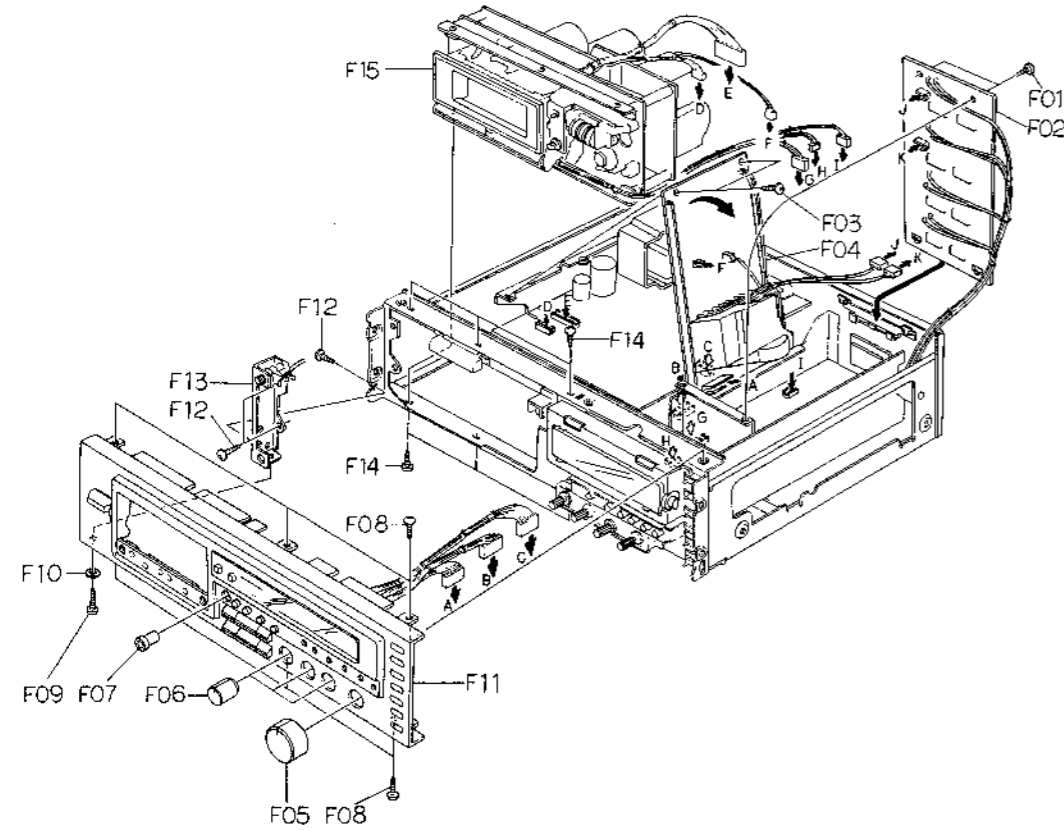


Fig. 2.2

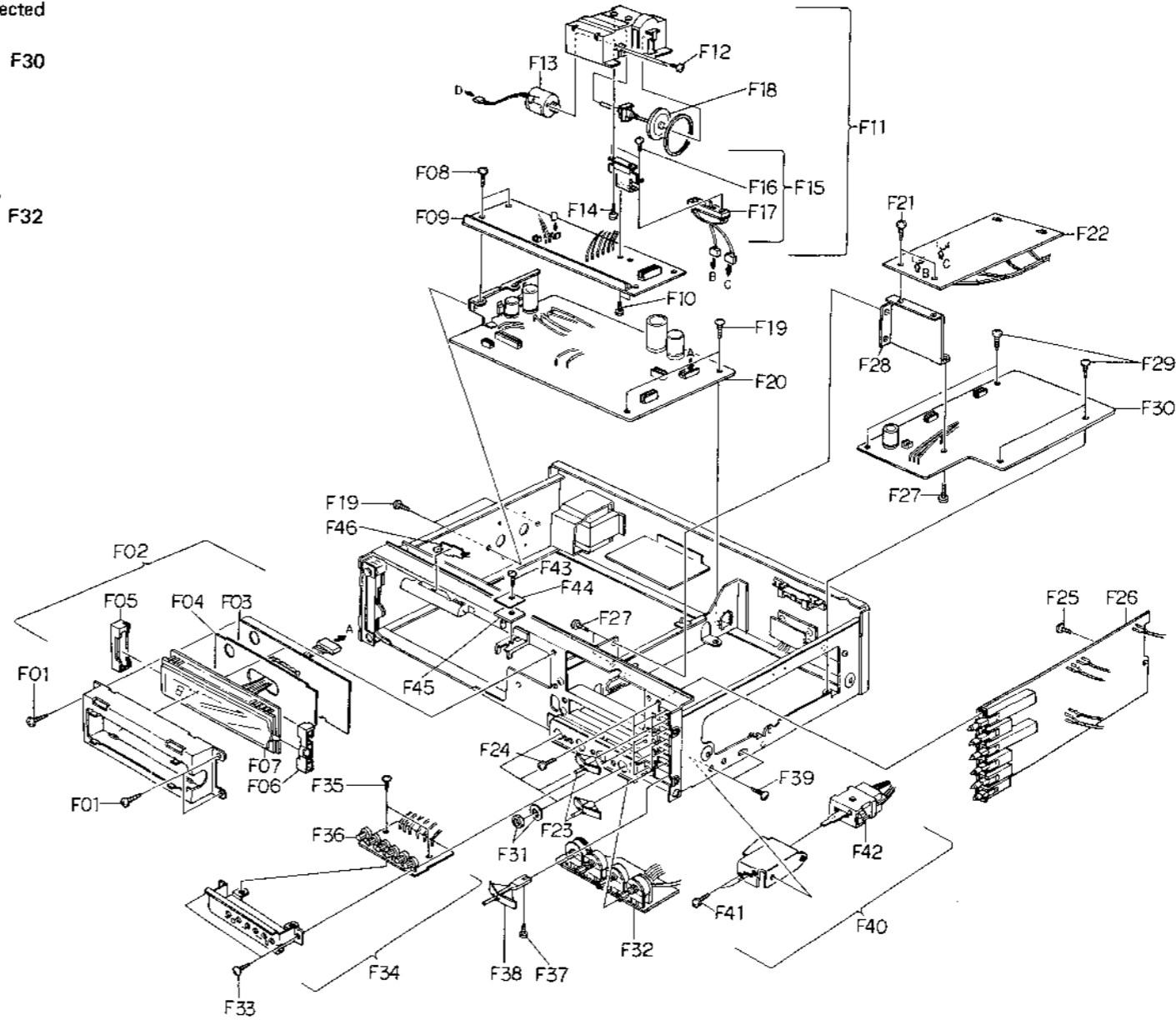


Fig. 2.3

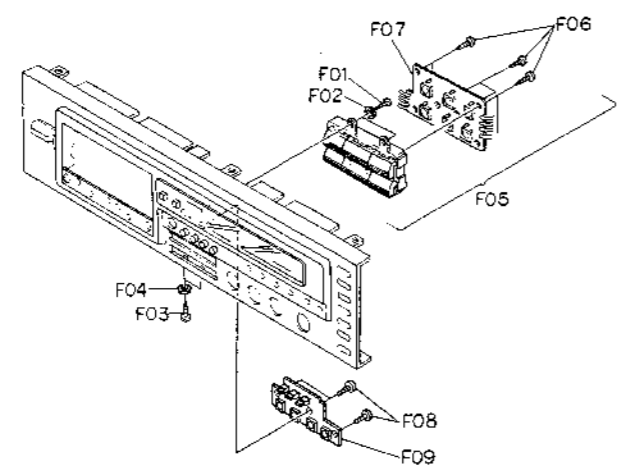


Fig. 2.4

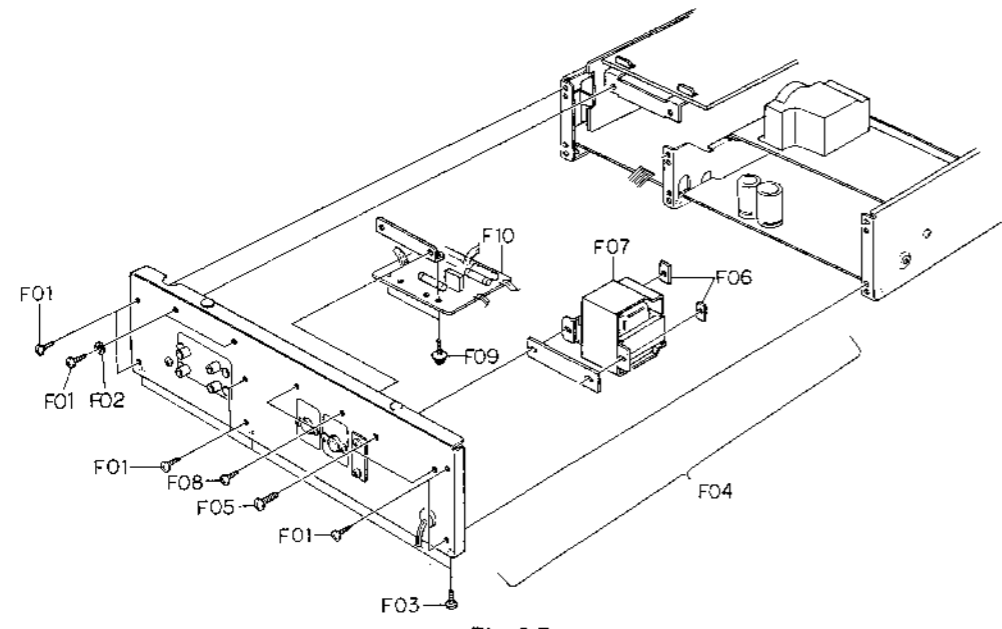


Fig. 2.5

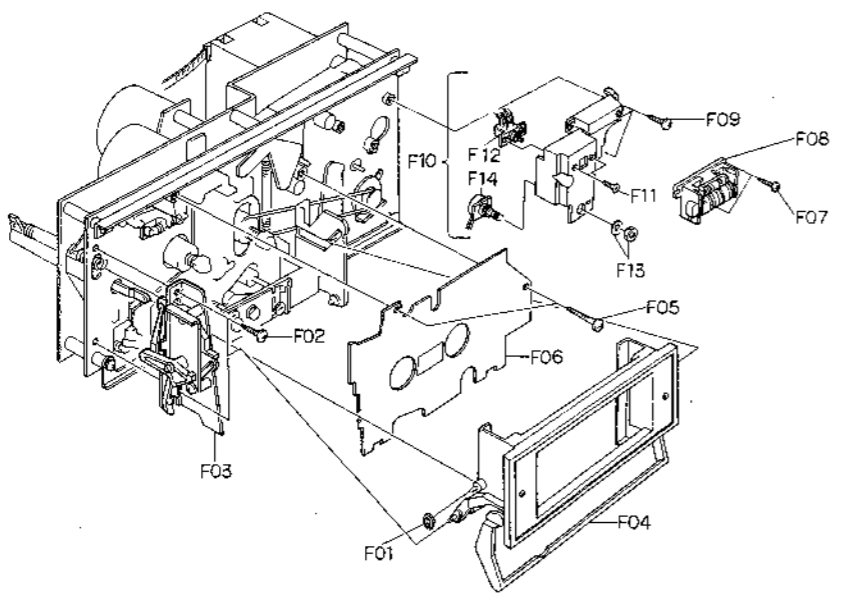


Fig. 2.6

2.19. Control Switch P.C.B. Ass'y and Calibration Indicator 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 F01, F02, F03 and F04, then disassemble F05 (Control Button Ass'y).
- (3) Remove F06, then disassemble F07 (Control Switch P.C.B. Ass'y).
- (4) Remove F08, then disassemble F09 (Calibration Indicator P.C.B. Ass'y).

2.20. Rear Panel Ass'y

Refer to Fig. 2.5.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.2 and 2.3.
- (2) Remove F01, F02 and F03, then disassemble F04 (Rear Panel Ass'y).

2.21. Power Transformer and Fuse P.C.B. Ass'y

Refer to Fig. 2.5.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to items 2.2 and 2.3.
- (2) Remove F05 and F06, then disassemble F07 (Power Transformer).
- (3) Remove F08 and F09, then disassemble F10 (Fuse P.C.B. Ass'y).

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

Refer to Fig. 2.6.

- (1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.7.
- (2) Press the Eject Button to open the Cassette Case Ass'y.
- (3) Remove F01 and F02, then disassemble F03 (Cassette Case Holder L Ass'y) by releasing the self-interlocking pin of the Damper Lock Arm and F04 (Cassette Case Ass'y).
- (4) Remove F05, then disassemble F06 (Cover Plate Ass'y).

2.23. Tape Counter Ass'y, Memory Switch and Pitch Control Volume

Refer to Fig. 2.6.

- (1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.7.
- (2) Remove F07, then disassemble F08 (Tape Counter Ass'y).
- (3) Remove F09, then disassemble F10 (Pitch Control Holder Ass'y).
- (4) Remove F11, then disassemble F12 (Memory Switch).
- (5) Remove F13, then disassemble F14 (Pitch Control Volume).

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

Refer to Fig. 2.7.

- (1) Refer to Fig. 2.2. Remove Mechanism Ass'y referring to item 2.7.
- (2) Remove F01 and F02, then disassemble F03 (Flywheel Holder Ass'y) and F08 (Capstan Belt).
- (3) Remove F04, then disassemble F05 (Capstan Motor Ass'y).
- (4) Remove F06, then disassemble F07 (Speed Cal. P.C.B. Ass'y).
- (5) Remove F09 (Supply Flywheel Ass'y), then disassemble F10 (Take-up Flywheel Ass'y).
- (6) After removing both Flywheel Assemblies, disassemble F11 (Thrust Washer 3mm), F12 (Thrust Washer 2.6mm), F13 (Flange Thrust Cap) and F14 (Flange Thrust Spring).

2.25. Sub Mechanism Chassis Ass'y

Refer to Fig. 2.8.

- (1) Remove Flywheel Holder Ass'y referring to item 2.24.
- (2) Remove F01 and F02, then disassemble F03 (Sub Mechanism Chassis Ass'y).

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

Refer to Fig. 2.8.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.25.
- (2) Remove F04, then disassemble F05 (Control Motor Ass'y).
- (3) Remove F06, then disassemble F07 (Reel Motor Ass'y).

2.27. Cam Control Volume

Refer to Fig. 2.8.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.25.
- (2) Remove F08, then disassemble F09 (Volume Coupler).
- (3) Remove F10, then disassemble F11 (Cam Control Volume).

2.28. Azimuth Motor Ass'y

Refer to Fig. 2.8.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.25.
- (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).

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

Refer to Fig. 2.8.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.25.
- (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).

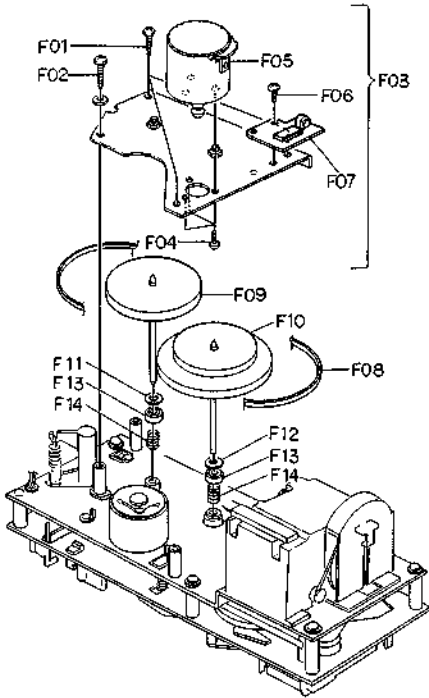


Fig. 2.7

2.30. Cam Drive Gear and Control Cam

Refer to Fig. 2.8.

- (1) Remove Sub Mechanism Chassis Ass'y referring to item 2.25.
- (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).

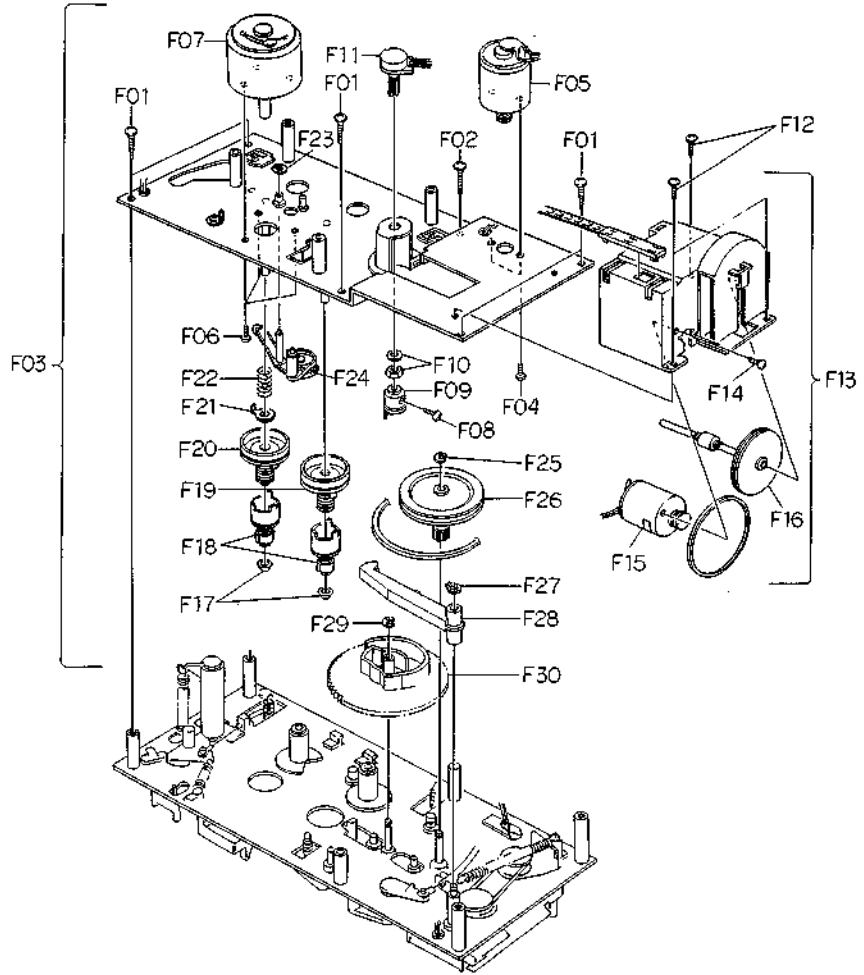


Fig. 2.8

2.31. Head Mount Base Ass'y

Refer to Fig. 2.9.

- (1) Refer to Fig. 2.6. Remove Cassette Case Ass'y referring to item 2.22.
- (2) Remove F01, then disassemble F02 (Head Mount Base Ass'y).

2.32. Pressure Roller Ass'y and Erase Head

Refer to Fig. 2.9.

- (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. 2.9.

- (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 F10 by 90° by pushing it, then disassemble F12 (Record Head Ass'y) and F13 (RH Azimuth Alignment Plate).

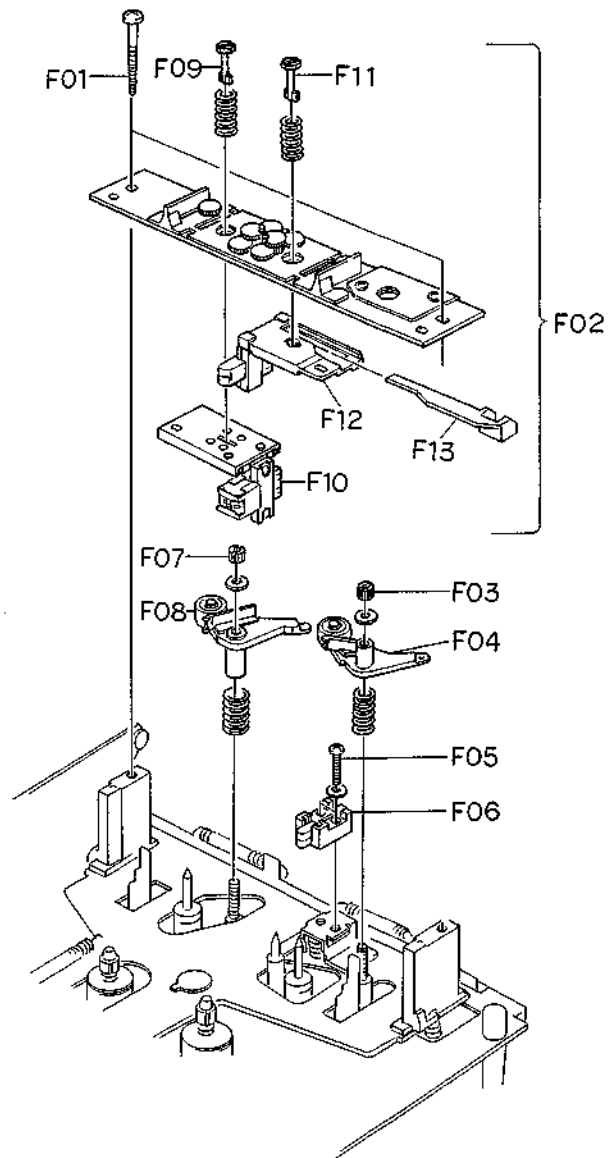


Fig. 2.9

3. 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 – 1 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) Audio Analyzer T-100
(including Distortion, Wow/Flutter, Speed, Oscillator and dB meters)

Note: (10) – (28) are the products of Nakamichi Corporation.

4. MECHANICAL ADJUSTMENTS

4.1. Mechanism Control Cam Adjustment

Before adjustment, disassemble the Front Panel Ass'y, then remove the Cover Plate referring to items 2.5 and 2.31.

(1) Offset Adjustment of Control Motor Driver

- (a) Refer to Figs. 4.1 and 4.2.
Adjust VR402 and VR403 on the Logic P.C.B. Ass'y to locate approximately at the middle of the variable range. Then turn ON the Power switch.
VR402 (for Cam position stop)
VR403 (for Cam position play)
- (b) Press the Stop button to set the N-682ZX in Stop mode.
Adjust VR402 (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-682ZX in Playback mode.
(Cam will rotate, and the position marked with "PY" comes to the pointer.) Adjust VR403 (for play) so that the "PY" mark on the Cam corresponds to the pointer.
- (d) Repeat above (b) and (c) 2 - 3 times so that the "S" and "PY" marks on the Cam correspond to the pointer accurately in Stop and Playback modes respectively.
(This adjustment is required because the position adjusted by one volume will be slightly changed when the other volume is adjusted.)
- (e) Set the N-682ZX in F.F., Pause, or Cue mode by pressing each button (press F.F. and Pause buttons to set the N-682ZX 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.

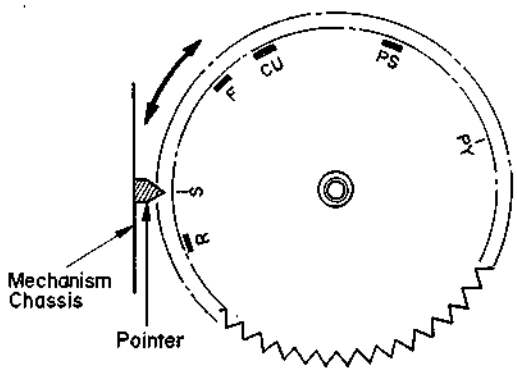


Fig. 4.1

(2) Offset Fine Adjustment of Control Motor Driver

Adjust only if a satisfactory result is not obtained in "(1) Offset Adjustment of Control Motor Driver". This adjustment is made by changing the value of the fixed resistors on the Logic 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 VR405 (10 kΩ) in Stop, Fast (F.F. or Rew.), Pause and Playback modes.

(b) Reference Voltage

Reference voltage at the sliding contact of VR405 (Cam Control Volume) in each mode is as follows:

Mode	Reference Voltage (Typical Value)
Stop	3.0 V
Fast (F.F./Rew.)	1.3 V
Pause	-2.8 V
Play	-5.4 V

} -1.7 V ±0.25 V
} -2.6 V ±0.4 V

(c) Resistors for Adjustment

Mode	Ref. No.	Typical Value
Stop	R461	9.1 kΩ (F)
Fast (F.F./Rew.)	R462	4.32 kΩ (F)
Pause	R445	287 kΩ (F)
Play	R443	174 kΩ (F)

(d) Adjustment Procedures

- 1) Press the Stop button to set the N-682ZX in Stop mode.
Adjust the value of R461 to obtain 3.0 V (±0.6 V) at the sliding contact of VR405.
Note: When R461 is adjusted, the reference voltage in Fast (F.F. or Rew.) mode is changed. Therefore, re-check of the reference voltage in Fast (F.F. or Rew.) mode is required. If the reference voltage is out of the range, re-adjustment of R462 according to next step 2) is necessary.

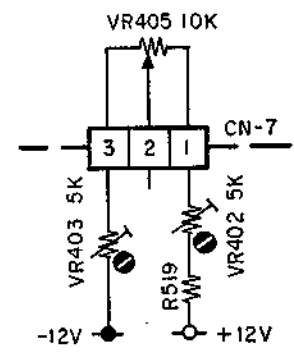


Fig. 4.2

- 2) Set the N-682ZX in F.F. mode, then adjust the value of R462 so that the voltage at the sliding contact of VR405 will become lower by 1.7 V (± 0.25 V) than in Stop mode.
- 3) Press the Pause button to set the N-682ZX in Pause mode.
Adjust the value of R445 to obtain -2.8 V ($+0.4$, -0.15 V) at the sliding contact of VR405.
- 4) Set the N-682ZX in Playback mode, then adjust the value of R443 so that the voltage at the sliding contact of VR405 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-682ZX 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 R483 and R484 so that the voltage at the sliding contact of VR405 becomes -3.6 V (± 0.3 V) when Reel Motor starts rotation.
- (d) Observe the mute signal at the Q418 collector. Turn the Cam referring to above step (c) and check to insure that the voltage at the sliding contact of VR405 is -3.8 V (± 0.3 V) when mute is released (mute signal changes from H to L).
(This voltage is determined by the adjustment of R483 and R484 in above step (c).)
- (e) Observe the $\overline{\text{Rec}}$ signal at the Q417 collector. Turn the Cam referring to above step (c) and adjust the value of R488 to obtain -2.1 V (± 0.4 V) at the sliding contact of VR405 when $\overline{\text{Rec}}$ signal changes from H to L (bias oscillation will begin).
- (f) Upon completion of the above adjustment, re-connect wires to the motor terminals.

4.2. Tape Speed Adjustment

- (1) Remove the Top Cover Ass'y referring to item 2.2.
- (2) Connect a Frequency Counter to the Output Jack.
- (3) Load a 3 kHz Speed Wow/Flutter Tape (DA09006A) and play it back.
- (4) Referring to Fig. 4.3, 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.
CCW: Motor drives slowly.
CW: Motor drives fast.

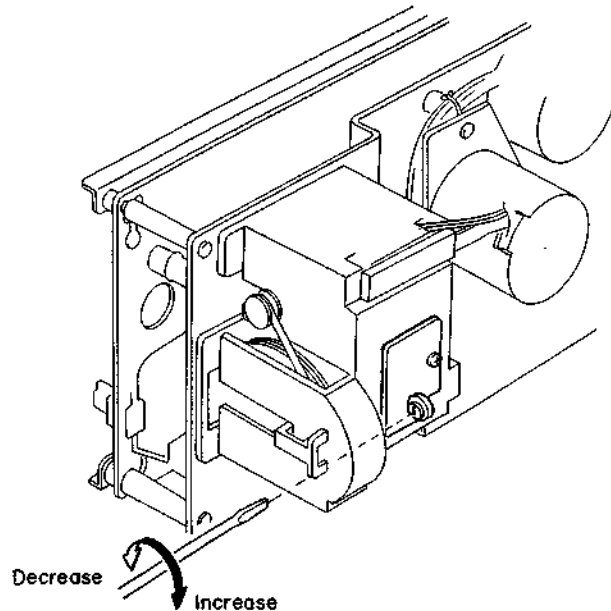


Fig. 4.3

4.3. Record Head and Playback Head Tilt Adjustment

Note: On items 4.3 – 4.9, refer to Fig. 4.4 flow chart. Refer to Figs. 4.5 and 4.6.

- (1) Load a Tilt Check Gauge M-9039 (DA09039A) in the N-682ZX.
- (2) Clip the grounding terminal of the Tilt Check Gauge with one end of the cord with clip, and the chassis of the N-682ZX with the other end.
- (3) Remove both of the Height Gears.
- (4) Set the N-682ZX 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-682ZX in Stop mode and fit both of the serrated Height Gears. Then set the N-682ZX 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.

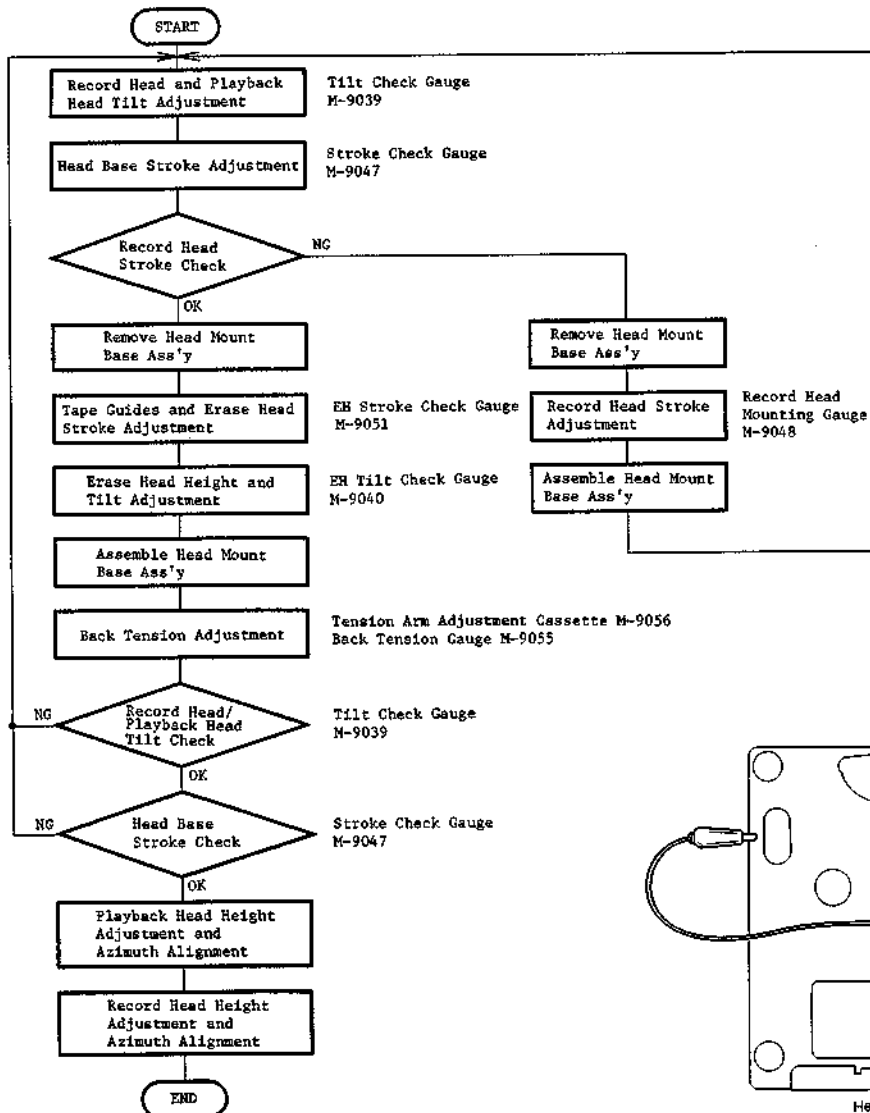


Fig. 4.4

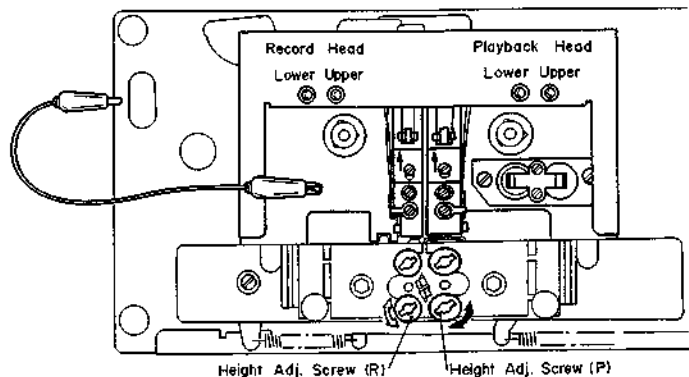


Fig. 4.5

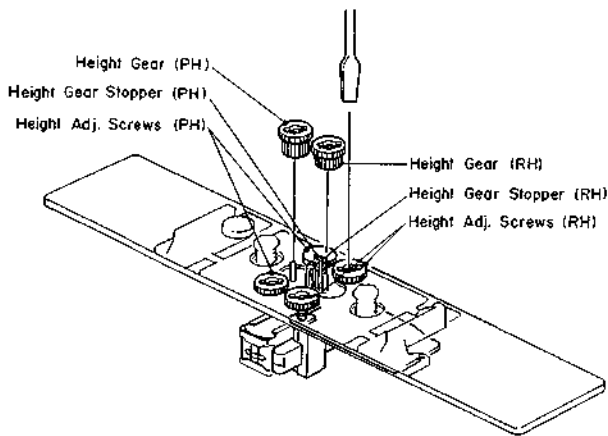


Fig. 4.6

4.4. 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. 4.7.

- Load a Stroke Check Gauge M-9047 (DA09047B) in the N-682ZX.
- Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-682ZX 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.

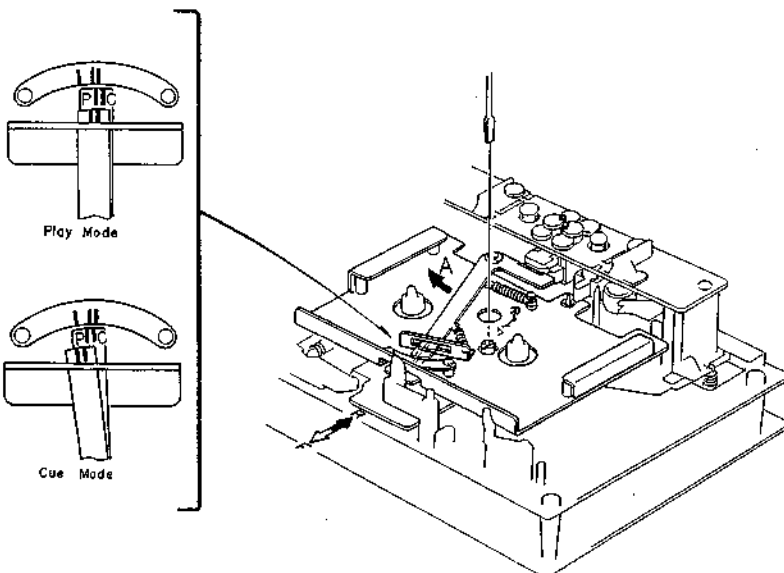


Fig. 4.7

- 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).

(2) Head Base Stroke Adjustment in Cue Mode

Refer to Figs. 4.7 and 4.8.

- Load a Stroke Check Gauge M-9047 (DA09047B) in the N-682ZX.
- Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-682ZX 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 VR401 on the 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.

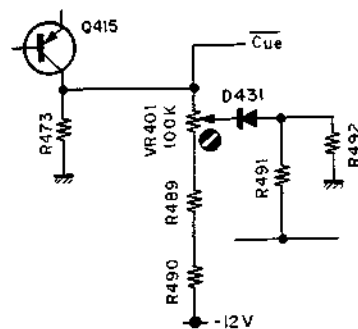


Fig. 4.8

4.5. Tape Guides Adjustment and Erase Head Stroke Adjustment

Remove Head Mount Base Ass'y referring to item 2.31. Refer to Figs. 4.9 and 4.10.

(1) Supply Tape Guide Height Adjustment

- (a) Load an EH Stroke Check Gauge M-9051 (DA0-9051A) in the N-682ZX.
- (b) Set the N-682ZX 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-682ZX 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.

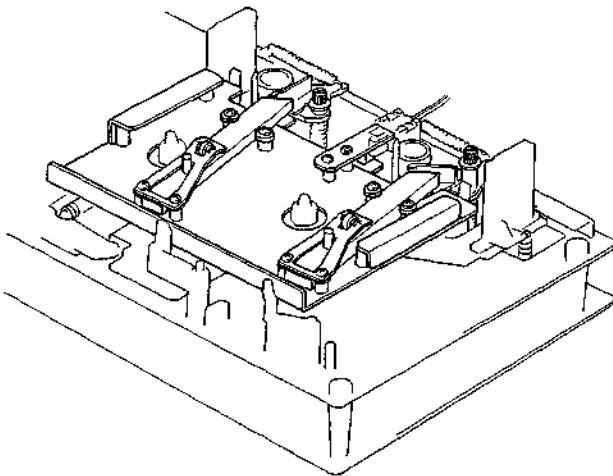


Fig. 4.9

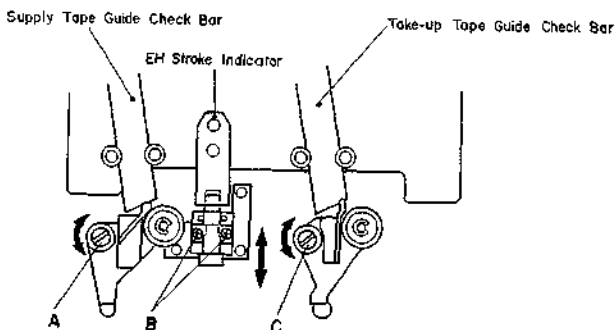


Fig. 4.10

(2) Take-up Tape Guide Height Adjustment

- (a) Load an EH Stroke Check Gauge M-9051 (DA0-9051A) in the N-682ZX.
- (b) Set the N-682ZX 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-682ZX 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 (DA0-9051A) in the N-682ZX.
- (b) Set the N-682ZX 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.

4.6. Erase Head Height and Tilt Adjustment

Refer to Figs. 4.11 and 4.12.

- (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-682ZX.
- (3) Set the N-682ZX in Stop mode.
- (4) Check to insure whether one of the 3 Beacons is illuminating. Look down the mirror as shown by an arrow mark and slowly turn the Screw "Height" counterclockwise (or clockwise) so that the two horizontal lines on the mirror will become superposed on the line (in different color) of the erase head, and check to insure whether Beacon "1" is illuminating.
- (5) Turn Screw "Tilt" counterclockwise (or clockwise) to light on Beacon "2". Excessive turning will cause the Beacon "1" to light off. Adjustments of Screw "Tilt" will therefore be conducted till both of the Beacons "1" and "2" illuminate.
- (6) Turn Screw "Azimuth" counterclockwise (or clockwise) to light on Beacon "3". Excessive turning will cause either Beacon "1" or "2" to light off, and therefore adjust Screw "Azimuth" until all of the 3 Beacons "1", "2" and "3" illuminate.

- (7) Check to insure whether the horizontal line on the mirror corresponds to that on the erase head. If not, (4) through (7) will have to be repeated till satisfactory results are obtained.
- (8) After completion of adjustment, 3 pcs. of screws shall be locked with lock tight paint.

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

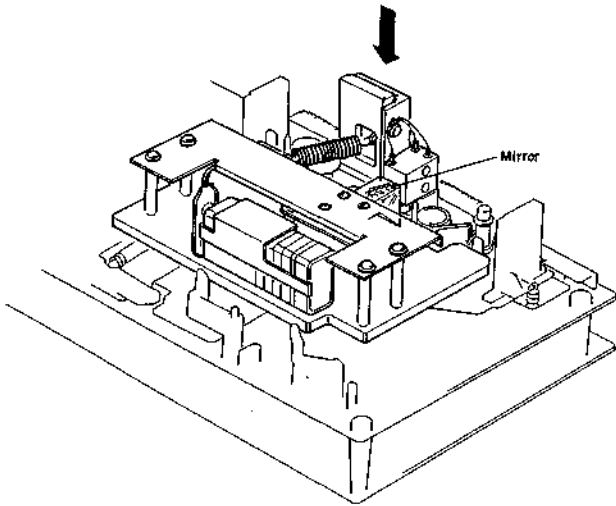


Fig. 4.11

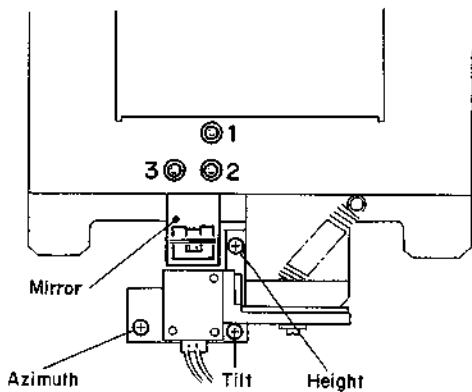


Fig. 4.12

4.7. Back Tension Adjustment

Refer to Figs. 4.13 – 4.16.

- (1) Load a Tension Arm Adjustment Cassette (DA09056A) in the N-682ZX referring to Fig. 4.13.
- (2) Set the N-682ZX 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. 4.14. Do not bend the top of the Back Tension Arm.
- (4) Set the N-682ZX in Stop mode, and remove the Tension Arm Adjustment Cassette (DA09056A), then set the N-682ZX 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. 4.15.

- (5) Load the Back Tension Gauge (DA09055A) in the N-682ZX.
- (6) Set the N-682ZX 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. 4.16, and obtain the torque of 7 g-cm to 9 g-cm range.

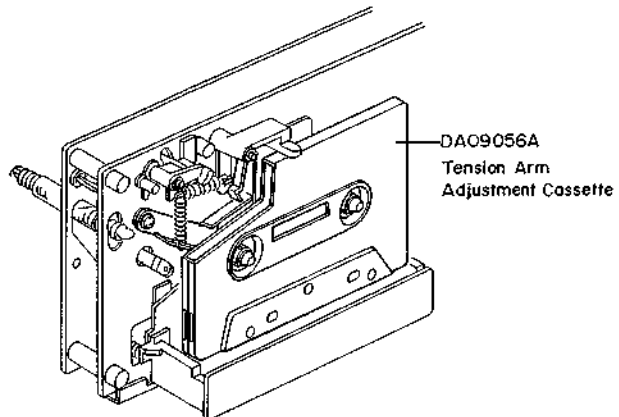


Fig. 4.13

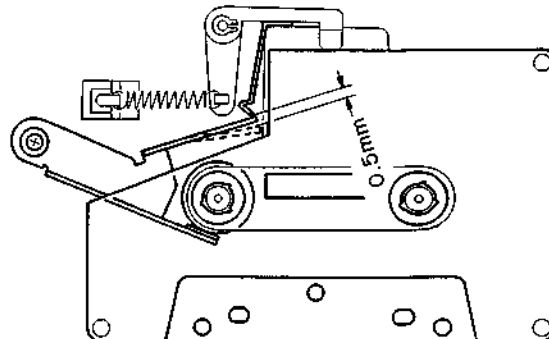


Fig. 4.14

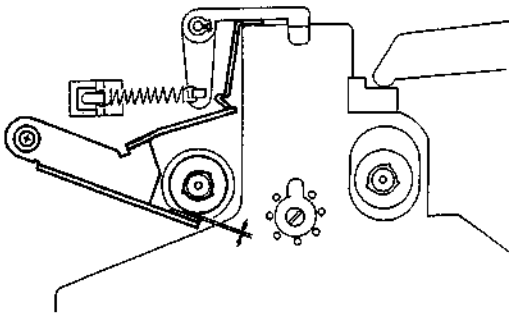


Fig. 4.15

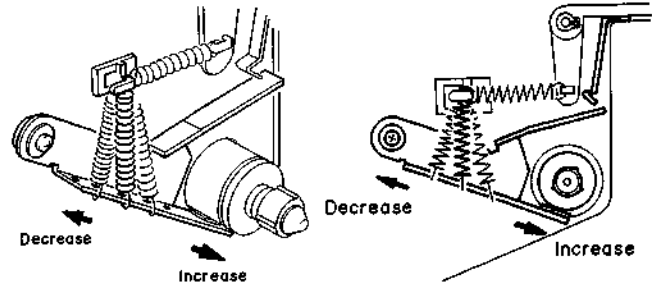


Fig. 4.16

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

(1) Playback Head Height Adjustment and Azimuth Alignment

Refer to Fig. 4.17.

- (a) Set the Monitor switch to Tape, then connect a VTVM to the Output Jacks.
- (b) Load a 1 kHz Track Alignment Tape (DA09007A), then set the N-682ZX in Play mode.
- (c) Turn the PH Height Gear until the outputs of both channels become minimum.
- (d) Load a 15 kHz Azimuth Tape (DA09004A), then set the N-682ZX in Play mode.
- (e) Turn the PH Azimuth Alignment Screw until the outputs of both channels become maximum.
- (f) Repeat above steps (b) through (e) one or two times to obtain optimum performance.

(2) Record Head Height Adjustment and Azimuth Alignment

Refer to Figs. 4.17 – 4.21.

- (a) Set the N-682ZX 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. 4.18.
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.
Ground IC902-13 and IC903-1 on the Auto Level P.C.B. Ass'y with jumper wires.
- (b) Set the Monitor switch to Tape, then connect a VTVM to the output Jacks.
- (c) Load a Reference SX Tape (DA09025A). Set the Eq. switch to 70 μ s and the Tape switch to SX. Then set the N-682ZX in Record and Play mode.
- (d) Set the Test Tone switch to 400 Hz, then turn the RH Height Gear until the outputs of both channels become maximum.
- (e) Set the Test Tone switch to 15 kHz, then set the N-682ZX in Record and Play mode. Turn the RH

Azimuth Alignment Screw until the outputs of both channels become maximum.

- (f) Repeat above steps (d) and (e) one or two times to obtain optimum performance.
- (g) After completion of the above adjustments, perform the following electrical adjustment.

Note: Use the same side of the same tape as used in the above steps.

- 1) Perform the Auto Azimuth Alignment function as follows:

- a) Press the Record and Pause buttons.
- b) Pressing the Auto Calibration button, press the Play button.

The Auto Calibration Indicator starts flashing.

- 2) Adjust VR901 on the Auto Level P.C.B. Ass'y so that the Azimuth Motor stops its rotation.

- (h) Set the N-682ZX in Stop mode.

Mount the Azimuth Alignment Wire on the Azimuth Alignment Motor Ass'y referring to Fig. 4.19.

(Correct the position of the Slide Lever of the Azimuth Alignment Wire by sliding by hand to insert the Slide Lever into the receptacle of the Azimuth Alignment Motor Ass'y.)

Remove the jumper wire from IC902-13 and IC903-1 on the Auto Level P.C.B. Ass'y.

- (i) After completion of the above adjustments, record 400 Hz tone to the same portion of both sides A and B of the tape.
- (j) 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. 4.21.

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.

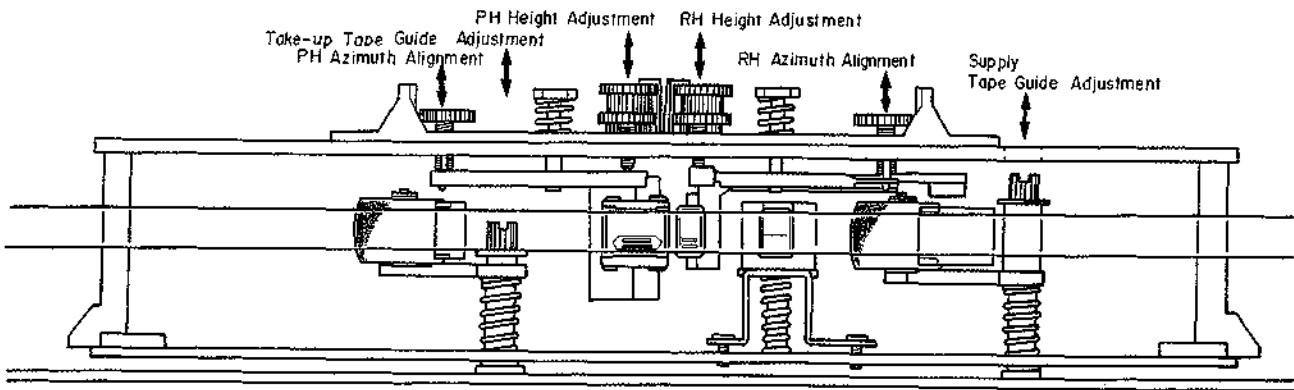


Fig. 4.17

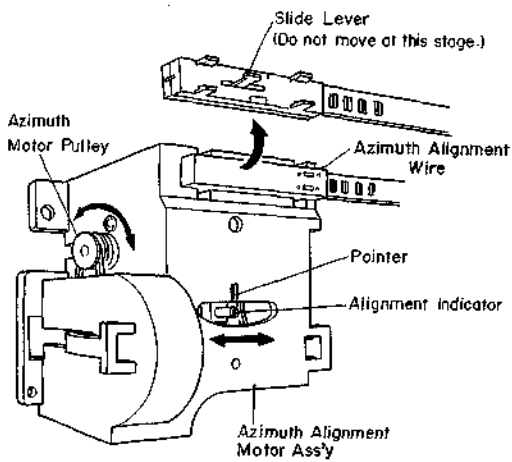


Fig. 4.18

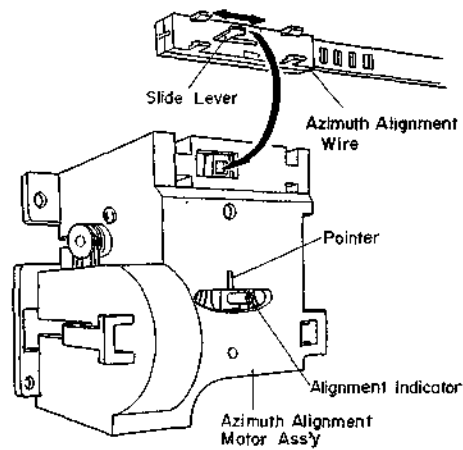


Fig. 4.19

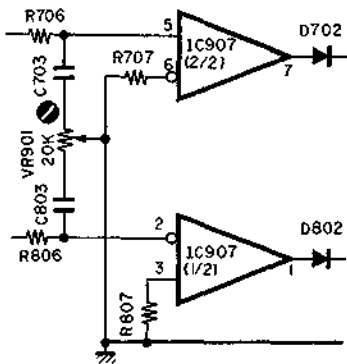


Fig. 4.20

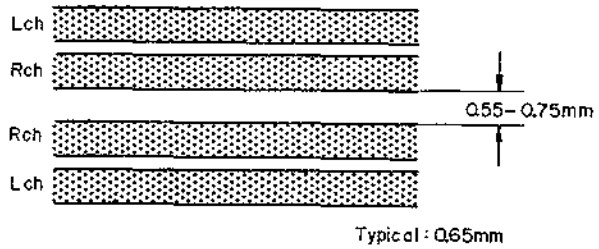


Fig. 4.21

4.9. Record Head Stroke Adjustment

Refer to Figs. 4.22 and 4.23.

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. 4.22 hold the Gauges (3.05 mm and 0.1 mm thickness) between the Block A and Block B, and fix the Block A with screws, pushing the Block A to the 2 guide pins.
- (5) Remove the Block B from the Mounting Gauge Plate.
- (6) As shown in Fig. 4.23, 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. 4.22 hold the Gauges (3.05 mm and either one of 0.05, 0.15, 0.2, 0.25, 0.3 or 0.35 mm thickness) between the Block A and Block B, and fix the Block A with screws, pushing the Block A to the 2 guide pins.

- (9) Remove the Block B from the Mounting Gauge Plate.
- (10) Mount the R-8L record head assembly onto the Mounting Gauge Plate.
- (11) As shown in the Fig. 4.23, 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.

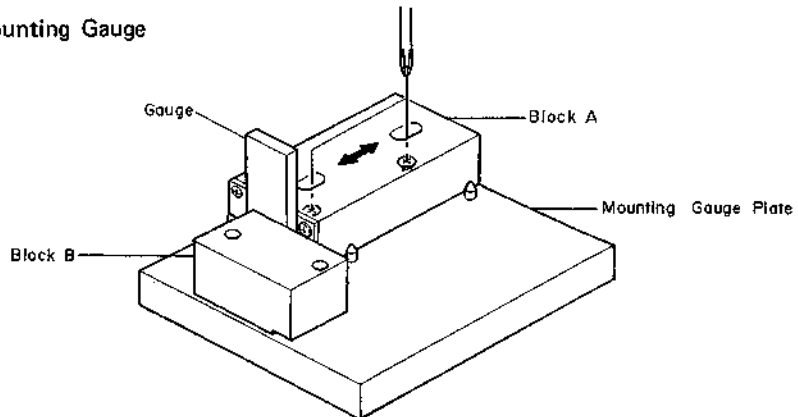
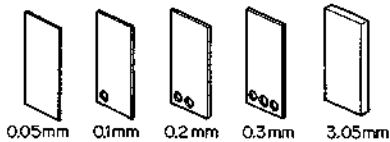


Fig. 4.22

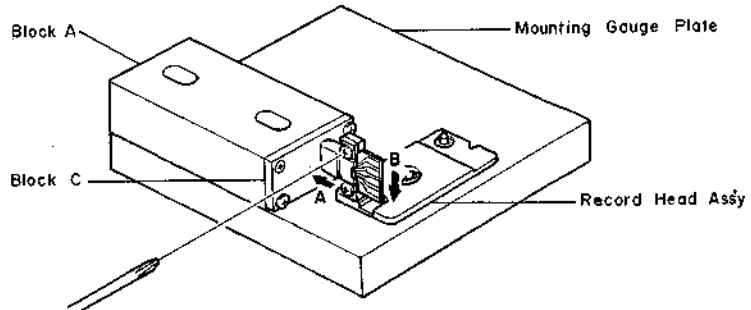


Fig. 4.23

4.10. Tape Travelling Adjustment

The adjustment shall be made with a modified version of the current type EXII C-90 as shown in Fig. 4.24 (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-682ZX.
- (2) Release the back-tension (rotate the Supply Reel and feed out some length of tape) and set the N-682ZX 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 "4.3. Record Head and Playback Head Tilt Adjustment", "4.4. Head Base Stroke Adjustment", "4.5. Tape Guides Adjustment and Erase Head Stroke Adjustment", "4.6. Erase Head Height and Tilt Adjustment", "4.7. Back Tension Adjustment", "4.8. Playback Head and Record Head Height Adjustment and Azimuth Alignment", "4.9. 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 are noted, the Pressure Roller Assemblies will have to be replaced.

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

The N-682ZX 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.

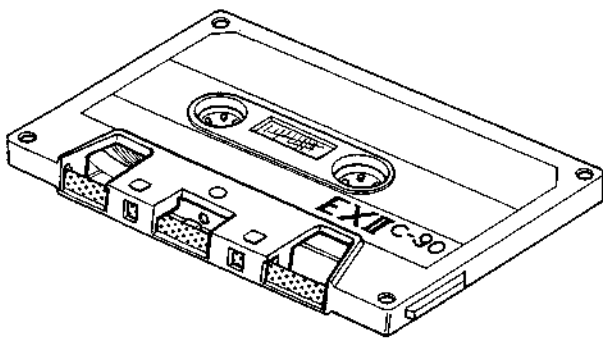


Fig. 4.24

4.11. Flywheel Holder Adjustment

- (1) Refer to Fig. 4.25.

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 Screws with a screwdriver, lock the Lock Nut.
- (4) Apply a quantity of lock tight paint to the Thrust Screws.

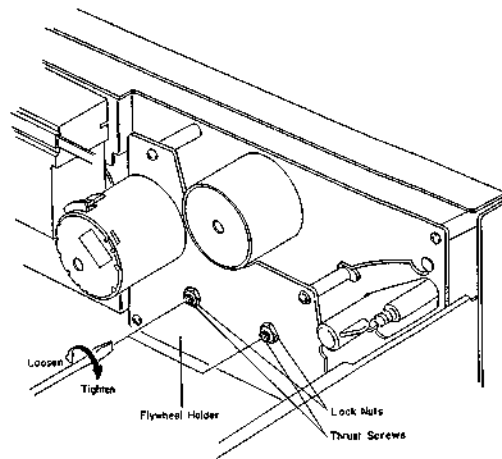


Fig. 4.25

4.12. Lubrication

N-682ZX is a lubrication-free cassette deck except when parts are replaced. Apply the following lubricant for each replaced part:

- (1) LAUNA #100
 - Capstan Shaft
 - Pressure Roller Shaft
 - Thrust Cap
- (2) FLOIL GB-TS-1
 - Reel Hub Shaft
 - Thrust portion on the Capstan Shaft

FLOIL GB-TS-1, made by Kanto Chemicals Co., Ltd. in Japan.

We suggest that you use the above or equivalent type. If unavailable please contact Kanto Chemicals Co., Ltd., 2-7 Kanda Suda-cho Chiyoda-ku, Tokyo 101 Japan.

- (3) Silicon Oil #3000 CST
 - Air Damper Piston

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

5. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

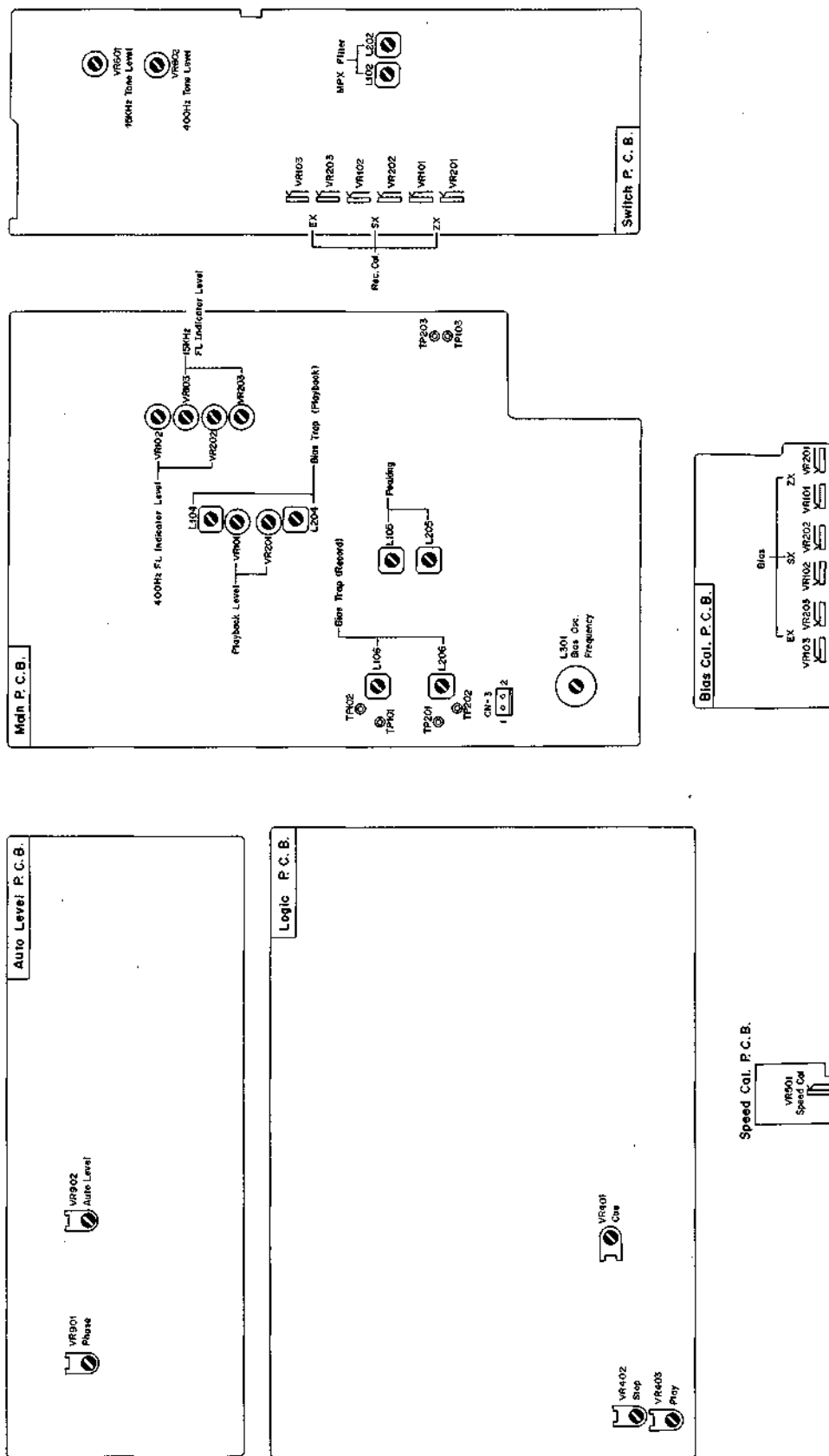


Fig. 5

6. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

6.1. 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 Output Jacks	Playback	Speed Cal. P.C.B. VR501	Adjust VR501 to obtain 3 kHz \pm 0.5%.
2	Tone Level Calibration	Test Tone 400 Hz and 15 kHz	VTVM to TP103, TP203 on Main P.C.B. and Output Jacks	Record, Pause Test Tone SW – 400 Hz/15 kHz	Switch P.C.B. VR602 (400 Hz) VR601 (15 kHz)	1. Set the Test Tone switch to 400 Hz. 2. Adjust VR602 to obtain 90 mV on the VTVM at TP103 (TP203). 3. Measure the reading on the VTVM at the Output Jacks. 4. Set the Test Tone switch to 15 kHz. 5. Adjust VR601 to obtain 20 dB lower level than in 3 on the VTVM at Output Jacks.
3	FL Indicator Level Calibration	400 Hz (0 dB) and 15 kHz (-20 dB) to Input Jacks	VTVM to TP103, TP203 on Main P.C.B.	Monitor SW – Source Test Tone SW – OFF	Main P.C.B. VR102, VR202 (400 Hz) VR103, VR203 (15 kHz)	1. Feed in 400 Hz, then adjust the Input Level controls to obtain 90 mV -0.8 dB on the VTVM. 2. Adjust VR102 (VR202) so that the 0 dB segment of the FL level indicator starts illuminating. 3. Connect IC303-5 and IC303-14 (+12 V) on the Main P.C.B. Ass'y with a jumper wire (meter amp. gain increases by 20 dB). 4. Feed in 15 kHz, then adjust the Input Level controls to obtain 9 mV -0.8 dB on the VTVM. 5. Adjust VR103 (VR203) so that the 0 dB segment of the FL level indicator starts illuminating. 6. Remove the jumper wire from IC303-5 and IC303-14.
4	MPX Filter Adjustment	19 kHz \pm 100 Hz to Input Jacks	VTVM to Output Jacks	Monitor SW – Source Test Tone SW – OFF Dolby NR SW – OFF MPX SW – OUT/IN	Switch P.C.B. L102, L202	1. Turn the Output Level control fully clockwise (maximum position). 2. Adjust the Input Level control to obtain 1 V on the VTVM. 3. Set the MPX switch to IN, then adjust L102 (L202) to obtain minimum reading on the VTVM (minimum reading will be less than -30 dB).
5	Playback Head Track Alignment	1 kHz Track Alignment Tape (DA09007A)	VTVM to Output Jacks	Playback Monitor SW – Tape Tape SW – SX Eq. SW – 70 μ s Test Tone SW – OFF Dolby NR SW – OFF MPX SW – OUT	PH Height Gear	Adjust PH Height Gear to obtain minimum readings of both channels on the VTVM. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 4.8.
6	Playback Head Azimuth Alignment	15 kHz Azimuth Tape (DA09004A)	VTVM to Output Jacks	Same as above	Playback Head Azimuth Alignment Screw	Adjust the Playback Head Azimuth Alignment Screw to obtain maximum readings of both channels on the VTVM. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 4.8. Note: Repeat steps 5 and 6 one or two times to obtain optimum performance.
7	Playback Level Calibration	400 Hz Level Tape (DA09005A)	VTVM to TP103, TP203 on Main P.C.B.	Same as above	Main P.C.B. VR101, VR201	Adjust VR101 (VR201) to obtain 90 mV on the VTVM.

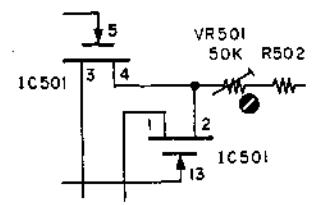


Fig. 6.1
1. Tape Speed

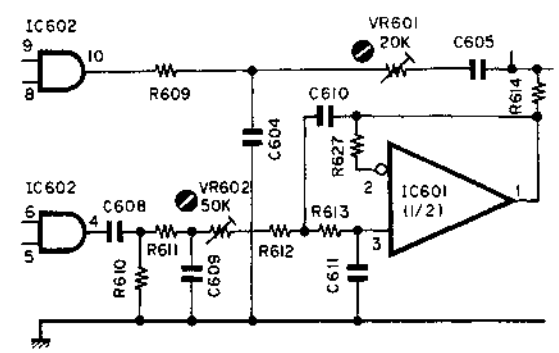


Fig. 6.2
2. Tone Level

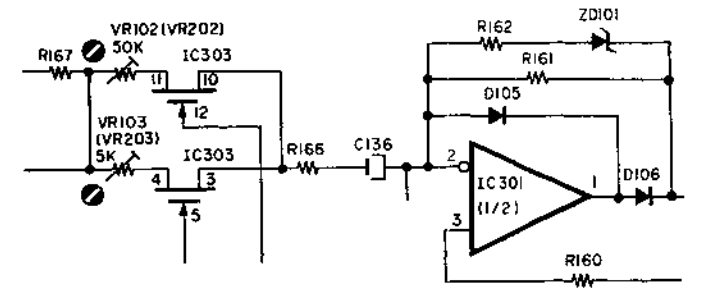


Fig. 6.3
3. FL Indicator Level

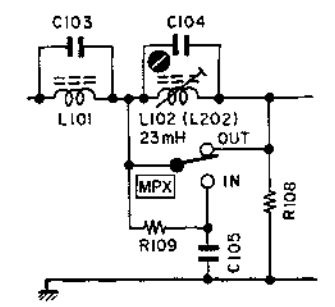


Fig. 6.4
4. MPX Filter

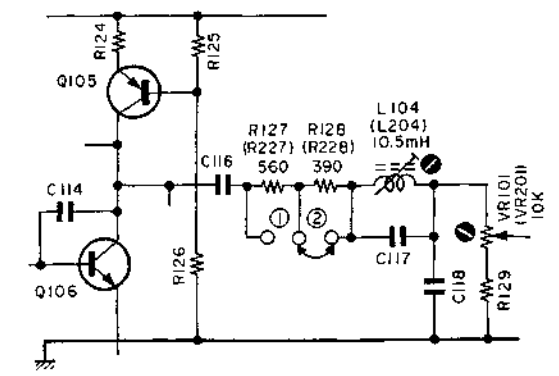


Fig. 6.5
7. Playback Level

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
8	Playback Frequency Response Adjustment	400 Hz Level Tape (DA09005A) 10 kHz PB Frequency Response Tape (DA09003A) 15 kHz PB Frequency Response Tape (DA09002A) 20 kHz PB Frequency Response Tape (DA09001A)	VTVM to Output Jacks	Playback Monitor SW – Tape Tape SW – SX Eq. SW – 70 μ s Test Tone SW – OFF Dolby NR SW – OFF MPX SW – OUT	Main P.C.B. R127, R227 R128, R228	<ol style="list-style-type: none"> Load a 400 Hz level tape and play it back. Adjust the Output Level control to a certain level (for example 0 dB). Load 10 kHz, 15 kHz and 20 kHz PB frequency response tapes and adjust the playback head azimuth to obtain maximum levels on the VTVM with each tape. Short R127 (R227) or R128 (R228) to obtain the following levels against 400 Hz level tape. 10 kHz: -20 dB -1 dB to +2 dB 15 kHz: -20 dB -1 dB to +3 dB 20 kHz: -20 dB -1 dB to +4 dB Conduct step 6 "Playback Head Azimuth Alignment". If above is not sufficient, refer to "Playback Frequency Response Adjustment" in item 6.2.
9	Bias Oscillation Frequency and Erase Current Adjustment		VTVM across an additional 0.1 Ω resistor and Frequency Counter to CN3-1	Record, Pause Monitor SW – Source Tape SW – ZX Eq. SW – 70 μ s Test Tone SW – OFF Dolby NR SW – OFF MPX SW – OUT	Main P.C.B. L301 R319, R320	<ol style="list-style-type: none"> Connect an additional 0.1 Ω resistor in series to the Erase Head, then connect a VTVM across it. Adjust L301 to obtain 105 kHz on the frequency counter. Check the erase current by the VTVM. Erase current will be in a range of 310 mA to 400 mA (typically approx. 350 mA). If erase current is not sufficient, increase it by shorting R319 or R320. After completion of the erase current adjustment, re-check the bias oscillation frequency. Remove the additional 0.1 Ω resistor.
10	Record Amplifier Equalizer Adjustment	23 kHz (-20 dB) to Input Jacks	VTVM to TP101, TP201 on Main P.C.B.	Record, Pause Monitor SW – Source Tape SW – ZX Eq. SW – 70 μ s Dolby NR SW – OFF MPX SW – OUT	Main P.C.B. L105, L205	<ol style="list-style-type: none"> Remove the bias-cut-jumper from the dip side of the Main P.C.B. Ass'y. Adjust L105 (L205) to obtain peak reading at 23 kHz on the VTVM. Re-solder the bias-cut-jumper.
11	Bias Trap Adjustment (Record Amp.)	Remove input signals	VTVM to TP102, TP202 on Main P.C.B.	Same as above	Main P.C.B. L106, L206	Adjust L106 (L206) to obtain minimum reading on the VTVM.
12	Bias Trap Adjustment (Playback Amp.)	Remove input signals	VTVM to L3M, R3M on Main P.C.B.	Same as above	Main P.C.B. L104, L204	Adjust L104 (L204) to obtain minimum reading on the VTVM.

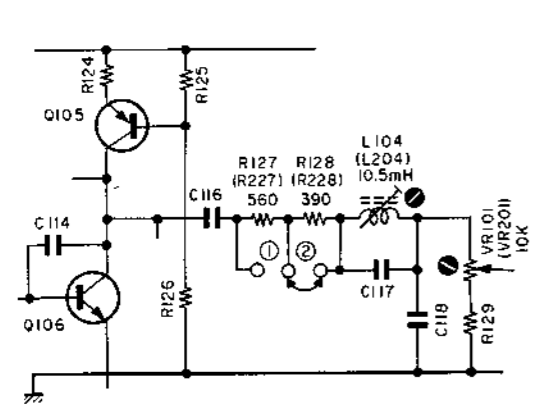


Fig. 6.6
8. Playback Frequency Response
12. Bias Trap (Playback Amp.)

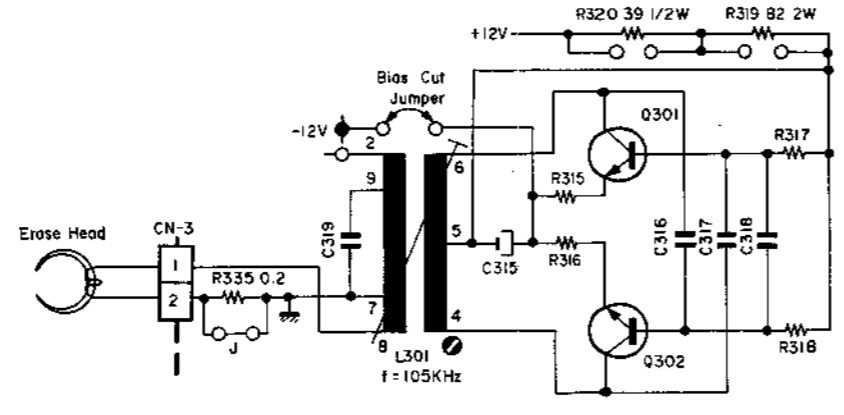


Fig. 6.7
9. Bias Oscillation Frequency and Erase Current

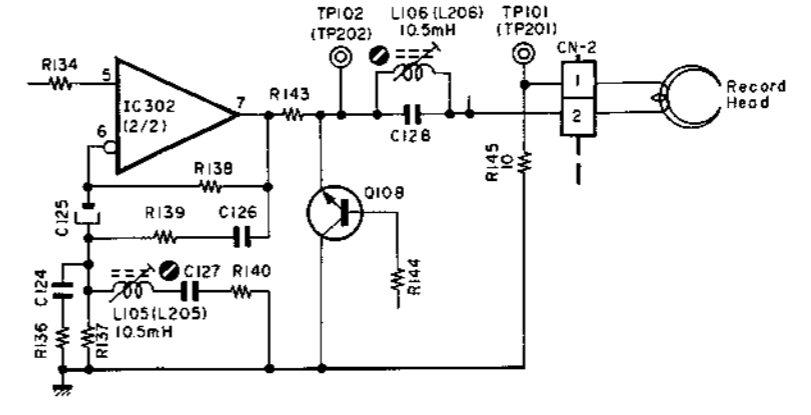


Fig. 6.8
10. Record Amp. Equalizer
11. Bias Trap (Record Amp.)

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
13	Record Head Height Adjustment and Azimuth Alignment	Test Tone 400 Hz and 15 kHz	VTVM to Output Jacks	Record, Playback Monitor SW – Tape Tape SW – SX Eq. SW – 70 μs Test Tone SW – 400 Hz/15 kHz Dolby NR SW – OFF MPX SW – OUT	Head Height: RH Height Gear Azimuth Alignment: Record Head Azimuth Alignment Screw Switch P.C.B. VR102, VR202 Bias Cal. P.C.B. VR102, VR202 Auto Level P.C.B. VR901	<ol style="list-style-type: none"> 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. 4.18. 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.) Ground IC902-13 and IC903-1 on the Auto Level P.C.B. Ass'y with jumper wires. Record Head Height Adjustment: <ol style="list-style-type: none"> Set the Test Tone switch to 400 Hz. Record signals on a reference SX tape (DA09025A), and then play it back. Adjust Record Cal. VR102 (VR202) on the Switch P.C.B. Ass'y and Bias Cal. VR102 (VR202) on the Bias Cal. P.C.B. Ass'y to the center position. Adjust the RH Height Gear to obtain maximum readings of both channels on the VTVM. Record Head Azimuth Alignment: <ol style="list-style-type: none"> Set the Test Tone switch to 15 kHz. Record signals on the reference SX tape (DA09025A) and then play it back. Adjust the Record Head Azimuth Alignment Screw to obtain maximum readings of both channels on the VTVM. Repeat 2 and 3 one or two times to obtain optimum performance. Press the Stop button, then perform the Auto Azimuth Alignment function as follows: <ol style="list-style-type: none"> Press the Record and Pause buttons. Pressing the Auto Calibration button, press the Play button. The Auto Calibration Indicator starts flashing. During the Auto Azimuth Alignment operation, adjust VR901 on the Auto Level P.C.B. Ass'y so that the Azimuth Motor stops its rotation. Press the Stop button, then mount the Azimuth Alignment Wire on the Azimuth Alignment Motor Ass'y referring to Fig. 4.19. Remove the jumper wires from IC902-13 and IC903-1 on the Auto Level P.C.B. Ass'y.

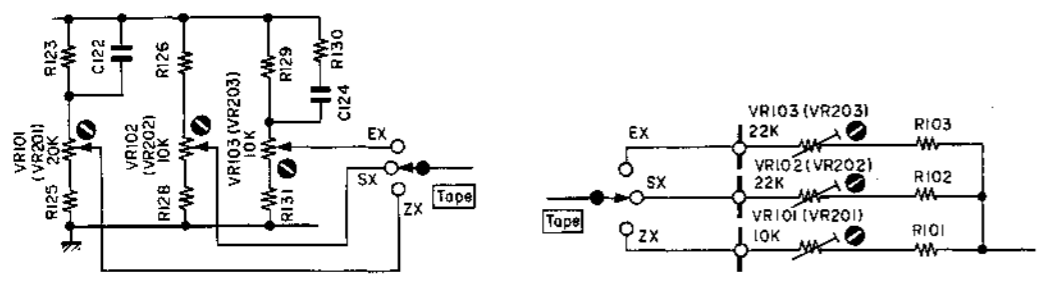


Fig. 6.9
13. Record Head Height and Azimuth

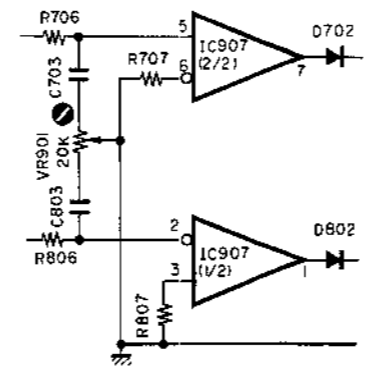


Fig. 6.10
13. Record Head Height and Azimuth

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
14	Record Level Calibration and Recording Bias Current Adjustment	Test Tone 400 Hz and 15 kHz	VTVM to TP103, TP203 on Main P.C.B. and Distortion Meter to Output Jacks	Record, Playback Monitor SW — Tape Tape SW — ZX/SX/EX Eq. SW — 70 μ s (ZX/SX) 120 μ s (EX) Test Tone SW — 400 Hz/15 kHz Dolby NR SW — OFF MPX SW — OFF	Switch P.C.B. (Record Cal.) ZX: VR101, VR201 SX: VR102, VR202 EX: VR103, VR203 Bias Cal. P.C.B. (Bias Current) ZX: VR101, VR201 SX: VR102, VR202 EX: VR103, VR203 Auto Level P.C.B. VR902	Adjustment should be made in the order of ZX, SX and EX. 1. Short IC903-1 and IC903-7 (GND), and IC902-12 and IC902-7 (GND) on the Auto Level P.C.B. Ass'y with jumper wires. 2. Remove the 2P connector CN-11 on the Auto Level P.C.B. Ass'y. 3. Turn the Auto Level Motor pulley by hand so that the left-hand end of the Level Indicator corresponds to the left-hand end of the pointer. Refer to Fig. 6.11. 4. Load a reference ZX tape (DA09037A), reference SX tape (DA09025A) and reference EXII tape (DA09066A). 5. Perform the Auto Calibration function as follows: a. Press the Record and Pause buttons. b. Pressing the Auto Calibration button, press the Play button. The Auto Calibration Indicator starts flashing. c. Press the Stop button approx. 6 seconds later. (Record Head Azimuth Alignment is carried out). 6. Set the Test Tone switch to 15 kHz, then record and play it back. Adjust Bias Cal. VR101 (VR201) for ZX, VR102 (VR202) for SX and VR103 (VR203) for EXII on the Bias Cal. P.C.B. Ass'y to obtain 0 dB on the FL level indicator. 7. Set the Test Tone switch to 400 Hz. Adjust Rec. Cal. VR101 (VR201) for ZX and VR102 (VR202) for SX on the Switch P.C.B. Ass'y to obtain 90 mV on the VTVM, and VR103 (VR203) for EXII to obtain 100 mV on the VTVM. 8. Repeat 6 and 7 one or two times to obtain optimum performance. 9. Perform the Auto Level Adjustment as follows by using the Azimuth Alignment Motor Ass'y instead of the Auto Level Motor Ass'y. a. Remove the Azimuth Alignment Wire by pulling out from the Azimuth Alignment Motor Ass'y. b. Remove the 2P connector CN-10 of the Azimuth Alignment Motor Ass'y from the Auto Level P.C.B. Ass'y, then connect it to CN-11 on the Auto Level P.C.B. Ass'y. c. Perform the Auto Calibration function. 1) Press the Record and Pause buttons. 2) Pressing the Auto Calibration button, press the Play button. The Auto Calibration Indicator starts flashing. d. Adjust VR902 on the Auto Level P.C.B. Ass'y so that the Azimuth Motor stops its rotation. e. Remove CN-10 of the Azimuth Alignment Motor Ass'y from CN-11 on the Auto Level P.C.B. Ass'y, then mount it to the original place (CN-10). Mount CN-11 of the Auto Level Motor Ass'y to the original place (CN-11). Mount the Azimuth Alignment Wire on the Azimuth Alignment Motor Ass'y. 10. Remove the jumper wires between IC903-1 and IC903-7, and IC902-12 and IC902-7. 11. Load a reference SX tape (DA09025A), then perform the Auto Calibration function as follows: a. Reset the Tape Counter to "000". b. Press the Record and Pause buttons. c. Pressing the Auto Calibration button, press the Play button. The Auto Calibration Indicator starts flashing. After disappearing flashing, the tape is rewound to "000". d. Set the Test Tone switch to 400 Hz, then record and play it back. Check to insure that the playback level is 0 dB on the FL level indicator for both channels. e. Set the Test Tone switch to 15 kHz, then record and play it back. Check to insure that the playback level is 0 dB on the FL level indicator for both channels. 12. Check whether the total harmonic distortion is less than 0.8% for ZX and 1.0% for SX and EXII.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
15	Overall Frequency Response Adjustment	400 Hz (0 dB) and 20 Hz to 22 kHz/20 kHz (-20 dB) to Input Jacks	VTVM to Output Jacks	Record, Playback Monitor SW - Source/Tape Tape SW - ZX/SX/EX Eq. SW - 70 μs (ZX/SX) 120 μs (EX) Test Tone SW - OFF Dolby NR SW - OFF/B-Type/ C-Type MPX SW - OUT	Main P.C.B. L105, L205	<p>Before adjustment, perform the following operation for each tape to be used.</p> <ol style="list-style-type: none"> Reset the Tape Counter to "000". Perform the Auto Calibration function. <ol style="list-style-type: none"> Press the Record and Pause buttons. Pressing the Auto Calibration button, press the Play button. <ol style="list-style-type: none"> Set the Monitor Switch to Source. Feed in 400 Hz (0 dB) and adjust the Input Level controls to obtain 0 dB on the FL level indicators. Switch the Generator output level to -20 dB. Set the Monitor switch to Tape, then record and play it back. Feed in 20 Hz to 22 kHz (-20 dB) for ZX and 20 Hz to 20 kHz (-20 dB) for SX and EXII, and check to insure if the output levels are within -20 dB ±3 dB. If above is not sufficient, adjust L105 (L205) to obtain approx. -20 dB on the VTVM at 22 kHz. Set the Dolby NR switch to B-Type/C-Type. Feed in 20 Hz to 22 kHz (-20 dB) for ZX and 20 Hz to 20 kHz (-20 dB) for SX and EXII, then check to insure that the levels are within a range of ±2 dB against the levels in Dolby NR switch OFF. Conduct step 14 "Record Level Calibration and Recording Bias Current Adjustment". If above is not sufficient, precise re-adjustment of step 8 "Playback Frequency Response", replacement of Playback Head or Record Head, or check on item 4.10 "Tape Travelling Adjustment" will be required.
16	Crosstalk Measurement	1 kHz to Input Jacks	1 kHz Band Pass Filter and VTVM to Output Jacks	Record and Playback Monitor SW - Tape Tape SW - ZX Eq. SW - 70 μs Test Tone SW - OFF Dolby NR SW - OFF MPX SW - OUT		<ol style="list-style-type: none"> Erase a reference ZX tape (DA09037A) with bulk eraser. Load the tape. Reset the Tape Counter to "000", then perform the Auto Calibration function referring to 15-b. Adjust the Input Level controls to obtain 0 dB on the FL level indicators, and record the signals on the reference tape. Turn the cassette tape the other way round and play it back. Measure the difference between 4 and 5.
17	Channel Separation Measurement	1 kHz to Input Jacks	Same as above	Same as above		<ol style="list-style-type: none"> Erase a reference ZX tape (DA09037A) with bulk eraser. Load the tape. Reset the Tape Counter to "000", then perform the Auto Calibration function referring to 15-b. Adjust the L ch (R ch) Input Level control to obtain 0 dB on the FL level indicators, and close the R ch (L ch) Input Level control. Record and play it back, then measure the R ch (L ch) level.

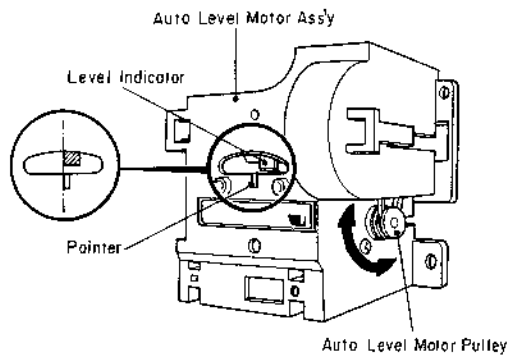


Fig. 6.11
14. Recording Level and Bias Current

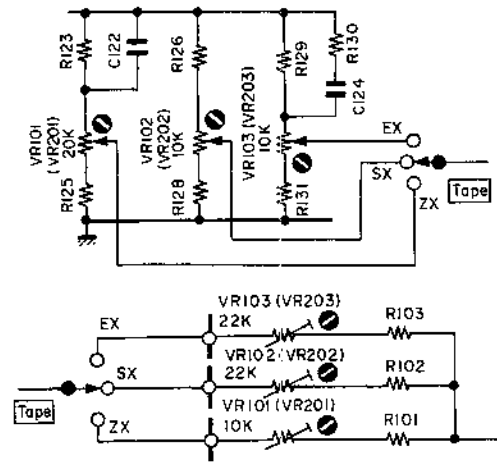
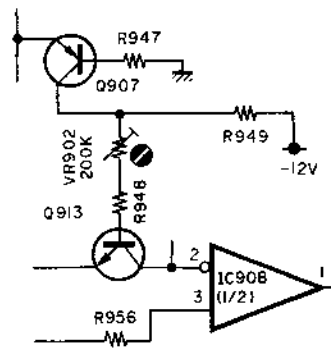


Fig. 6.12
14. Recording Level and Bias Current

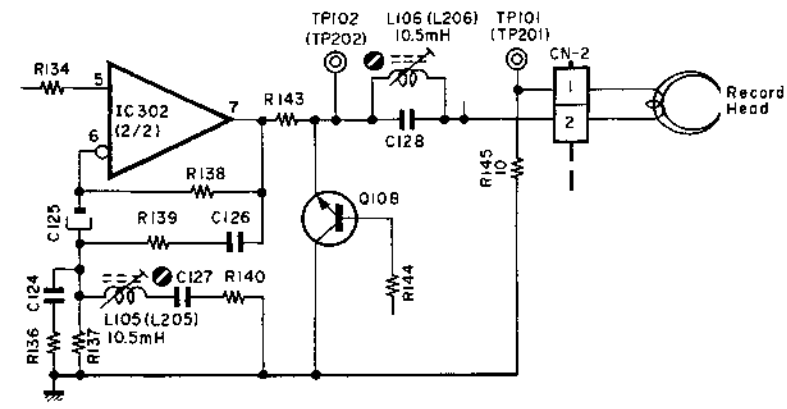


Fig. 6.13
15. Overall Frequency Response

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
18	Erasure Measurement	100 Hz to Input Jacks	100 Hz Band Pass Filter and VTVM to Output Jacks	Record and Playback Monitor SW - Tape Tape SW - ZX Eq. SW - 70 μ s Test Tone SW - OFF Dolby NR SW - OFF MPX SW - OUT		<ol style="list-style-type: none"> Erase a reference ZX tape (DA09037A) with bulk eraser. Load the tape. Reset the Tape Counter to "000", then perform the Auto Calibration function referring to 15-b. Adjust the Input Level controls to obtain 0 dB on the FL level indicators, and record the signals on the reference tape. Rewind the tape then close the Input Level controls. Record and play it back, then measure the difference between 4 and 5.
19	Signal to Noise Ratio Measurement	400 Hz to Input Jacks	VTVM and Distortion Meter to Output Jacks	Record and Playback Monitor SW - Tape Tape SW - ZX Eq. SW - 70 μ s Test Tone SW - OFF Dolby NR SW - B-Type/ C-Type MPX SW - OUT		<ol style="list-style-type: none"> Reset the Tape Counter to "000", then perform the Auto Calibration function referring to 15-b. Set the Dolby NR switch to B-Type/C-Type. Feed in 400 Hz and record, and play it back. Adjust the Input Level controls to obtain 3% total harmonic distortion in playback mode. Close the Input Level controls then record. After rearound, play back and check the output level difference between 4 and 5. <p>Note: The filter of iHF-A curve shall be used in the measurements.</p>
20	Total Harmonic Distortion Measurement	400 Hz to Input Jacks	VTVM and Distortion Meter to Output Jacks	Record and Playback Monitor SW - Tape Tape SW - ZX/SX/EX Eq. SW - 70 μ s (ZX/SX) 120 μ s (EX) Test Tone SW - OFF Dolby NR SW - OFF MPX SW - OUT		<ol style="list-style-type: none"> Reset the Tape Counter to "000", then perform the Auto Calibration function referring to 15-b. Adjust the Input Level controls to obtain 0 dB on the FL level indicators. Record and play it back. Read the distortion meter and check to insure that the distortion is less than 0.8% for ZX tape and 1.0% for SX and EXII tapes.
21	Wow/Flutter Measurement	3 kHz Speed and Wow/Flutter Tape (DA09006A)	Wow/Flutter Meter to Output Jacks	Playback Monitor SW - Tape Eq. SW - 70 μ s		Play back and read the wow/flutter meter.

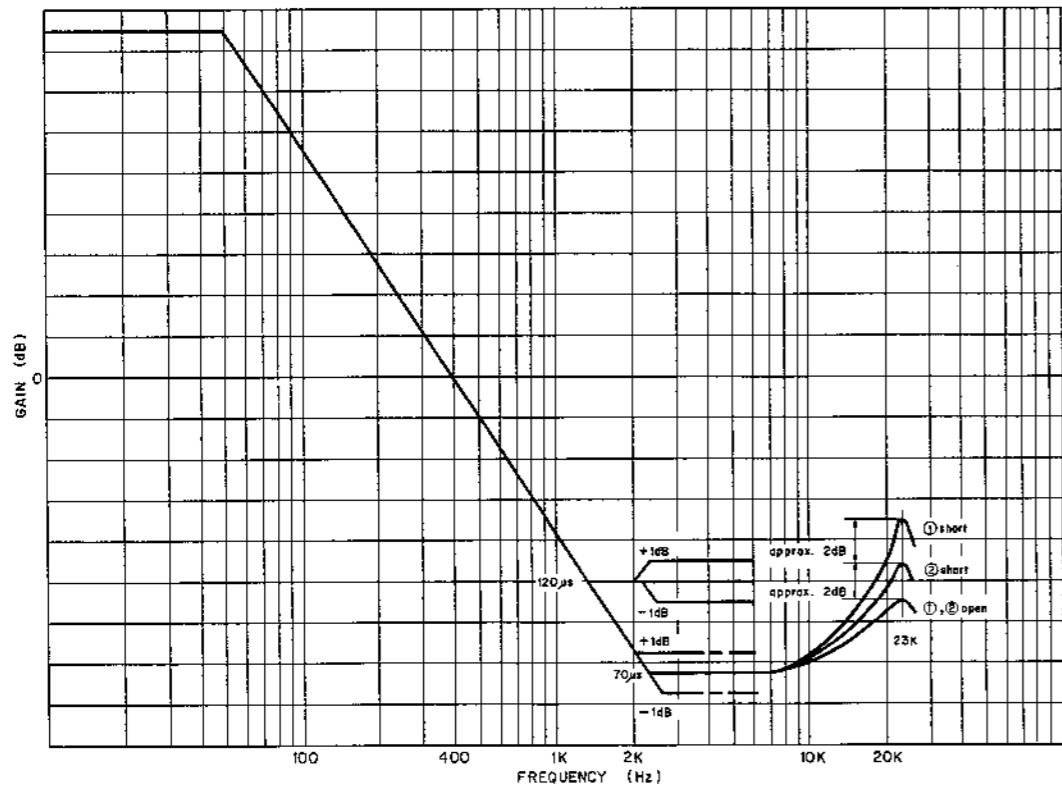


Fig. 6.14 Playback Equalization Curve

6.2. Frequency Response Adjustment

(1) Playback Frequency Response Adjustment

Refer to Figs. 6.14 and 6.15.

(a) Level Adjustment (for middle frequency response)

This adjustment will be required if playback level is not sufficient when 10 kHz PB frequency response tape is played back as referred to step 8 in 6.1. "Adjustment and Measurement Instructions".

Playback equalization level is varied by the modification of R120 (R220) on the Main P.C.B. Ass'y and R154 (R254) on the Dolby NR P.C.B. Ass'y.

Following are the details for level modification:

- Approx. +1 dB R120 (R220): 8.66K
R154 (R254): 6.49K
- 0 dB R120 (R220): 8.06K
R154 (R254): 6.98K
- Approx. -1 dB R120 (R220): 7.32K
R154 (R254): 7.87K

(b) Peaking Adjustment (for high frequency response)

This adjustment will be required if playback level is not sufficient when 20 kHz PB frequency response tape is played back as referred to step 8 in 6.1. "Adjustment and Measurement Instructions".

Peaking portion compensates the gap loss of the playback head.

Peaking level is varied by the short circuit of R127 (R227) or R128 (R228) on the Main P.C.B. Ass'y as illustrated in Fig. 6.14.

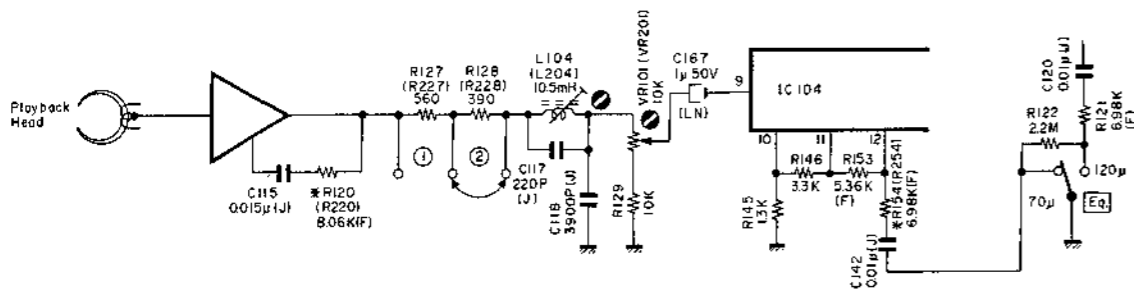


Fig. 6.15 Playback Eq. Amp.

(2) Record Current Frequency Response Adjustment

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

Normally however, peaking frequency is pre-adjusted to approx. 23 kHz in Record mode. Refer to Fig. 6.16.

(a) For ZX Tape

- 1) Feed in 400 Hz (0 dB), then record and play it back. Adjust bias current by VR101 (VR201) on the Bias Cal. P.C.B. Ass'y to obtain a 0.8% distortion.
- 2) Feed in 10 kHz and 400 Hz (-20 dB), then record and play it back.

Check the difference of the levels between 10 kHz and 400 Hz, and mount an additional capacitor in parallel with C120 (C220) on the Switch P.C.B. Ass'y from the dip side of the printed circuit board depending upon the difference of the levels against 400 Hz. Refer to Fig. 6.17.

Level Difference	Addition	Total
0 dB	0	1000 pF
-1 dB	330 pF	1330 pF
-2 dB	680 pF	1680 pF

- 3) Feed in 22 kHz (-20 dB), then record and play it back.

Adjust record peaking coil L105 (L205) to obtain flat overall frequency response.

(b) For SX Tape

- 1) Feed in 15 kHz and 400 Hz (-20 dB), then record and play it back.

Adjust bias current by VR102 (VR202) on the Bias Cal. P.C.B. Ass'y to obtain flat overall frequency response.

- 2) Feed in 20 kHz and 400 Hz (-20 dB), then record and play it back.

And check to insure that the overall frequency response is flat.

(c) For EX Tape

- 1) Feed in 15 kHz and 400 Hz (-20 dB), then record and play it back.

Adjust bias current by VR103 (VR203) on the Bias

Cal. P.C.B. Ass'y to obtain flat overall frequency response.

- 2) Feed in 20 kHz and 400 Hz (-20 dB), then record and play it back.

And check to insure that the overall frequency response is flat.

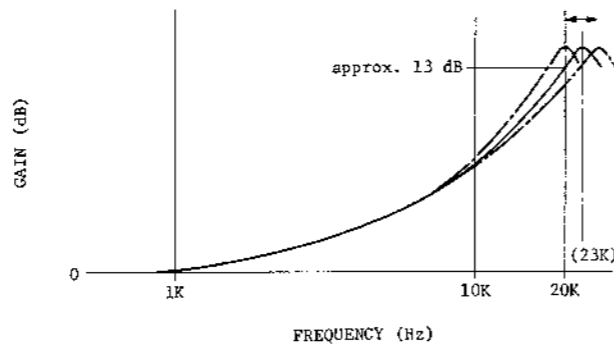


Fig. 6.16

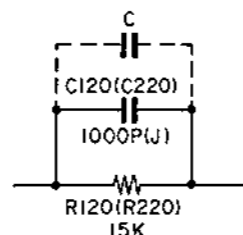


Fig. 6.17

6.3. Dolby NR Circuit Check

Dolby NR circuit incorporates a Dolby NR IC (μ A7300-PC) 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.

6.3.1. Dolby NR B-Type Circuit Check

(1) Playback Dolby NR Circuit

Signal Source: 1.4 kHz to pin No. M (S) on Dolby NR P.C.B.

Output Connection: VTVM to test point TP103 (TP203) on Main P.C.B.

Mode: Stop
Monitor SW - Tape
Dolby NR SW - B-Type/OFF

- (a) Connect a VTVM to TP103 (TP203) on the Main P.C.B. Ass'y.

- (b) Set the Dolby NR switch to B-Type. Feed in 1.4 kHz pin No. M (S) and adjust the generator output control to obtain 9 mV on the VTVM.

- (c) Set the Dolby NR switch to OFF. Check to insure that the reading is +3.2 dB \pm 1.5 dB on the VTVM.

(2) Record Dolby NR Circuit

Signal Source: 1.4 kHz to Input Jacks

Output Connection: VTVM to test point TP103 (TP203) on Main P.C.B., and IC102-16 (IC202-16) on Dolby NR P.C.B.

Mode: Stop
Monitor SW - Source
Dolby NR SW - B-Type/OFF

- (a) Connect a VTVM to TP103 (TP203) on the Main P.C.B. Ass'y.

- (b) Feed in 1.4 kHz and adjust the Input Level controls to obtain 9 mV/2.85 mV on the VTVM.

- (c) Remove the VTVM from TP103 (TP203) and reconnect it to IC102-16 (IC202-16) on the Dolby NR P.C.B. Ass'y.

- (d) Check to insure that the reading at IC102-16 (IC202-16) corresponds to the following with Dolby NR switch OFF and B-Type.

Input Level at TP103 (TP203)	Level at IC102-16 (IC202-16)	
	Dolby NR OFF	Dolby NR B-Type
9 mV	0 dB	+3.2 dB \pm 1.5 dB
2.85 mV	0 dB	+8.2 dB \pm 1.5 dB

6.3.2. Dolby NR C-Type Circuit Check

(1) Playback Dolby NR Circuit

Signal Source: 1.4 kHz to pin No. M (S) on Dolby NR P.C.B.

Output Connection: VTVM to test point TP103 (TP203) on Main P.C.B.

Mode: Stop
Monitor SW - Tape
Dolby NR SW - C-Type/OFF

- (a) Connect a VTVM to TP103 (TP203) on the Main P.C.B. Ass'y.

- (b) Set the Dolby NR switch to C-Type. Feed in 1.4 kHz to pin No. M (S) and adjust the generator output control to obtain 9 mV on the VTVM.

- (c) Set the Dolby NR switch to OFF. Check to insure that the reading is +6.5 dB \pm 1.5 dB on the VTVM.

(2) Record Dolby NR Circuit

Signal Source: 1.4 kHz to Input Jacks

Output Connection: VTVM to test point TP103 (TP203) on Main P.C.B., and IC102-16 (IC202-16) on Dolby NR P.C.B.

Mode: Stop
Monitor SW - Source
Dolby NR SW - C-Type/OFF

- (a) Connect a VTVM to TP103 (TP203) on the Main P.C.B. Ass'y.

- (b) Feed in 1.4 kHz and adjust the Input Level controls to obtain 9 mV/2.85 mV on the VTVM.

- (c) Remove the VTVM from TP103 (TP203) and reconnect it to IC102-16 (IC202-16) on the Dolby NR P.C.B. Ass'y.

- (d) Check to insure that the reading at IC102-16 (IC202-16) corresponds to the following with Dolby NR switch OFF and C-Type.

Input Level at TP103 (TP203)	Level at IC102-16 (IC202-16)	
	Dolby NR OFF	Dolby NR C-Type
9 mV	0 dB	+6.5 dB \pm 1.5 dB
2.85 mV	0 dB	+11.4 dB \pm 1.5 dB

7. MOUNTING DIAGRAMS AND PARTS LIST

Schematic Ref. No.	Part No.	Description
F1,2,3	BA04095A	Fuse P.C.B. Ass'y (U.S.A. & Canada)
	0B07842C	Fuse P.C.B.
	0B08374A	Fuse 1A 250V
	0B08342A	Spark Killer (1 pce.)
	0M04075B	Fuse Caution A112 (1 pce.)
	0M04078B	Fuse Label 1A 250V x 2 (1 pce.)
	0M03782A	Fuse Label 1A 250V (1 pce.)
	0J03834B	Fuse P.C.B. Holder (1 pce.)
0E00606A	Screw M3x6 Philips Pan Head (3A) (2 pcs.)	
0E00752A	Eyelet 2x3 (6 pcs.)	
F1,2,3	BA04096A	Fuse P.C.B. Ass'y (Japan)
	0B07842C	Fuse P.C.B.
	0B08686A	Fuse 1A 250V
	0B08363A	Spark Killer (1 pce.)
	0M04078B	Fuse Label 1A 250V x 2 (1 pce.)
	0M03782A	Fuse Label 1A 250V (1 pce.)
	0J03834B	Fuse P.C.B. Holder (1 pce.)
	0E00606A	Screw M3x6 Philips Pan Head (3A) (2 pcs.)
0E00752A	Eyelet 2x3 (6 pcs.)	
F1,2,3 F4,5	BA04097B	Fuse P.C.B. Ass'y (Others)
	0B07842C	Fuse P.C.B.
	0B08263A	Fuse T 315mA 250V
	0B08347A	Fuse T 1A 250V
	0B08349A	Fuse Clip (10 pcs.)
	0B08240A	Spark Killer (1 pce.)
	0M04073A	Fuse Label 315mA 250V (1 pce.)
	0M04131A	Fuse Label 1A 250V x 2 (1 pce.)
	0M04074A	Fuse Label 315mA 250V x 2 (1 pce.)
	0J03834B	Fuse P.C.B. Holder (1 pce.)
	0E00606A	Screw M3x6 Philips Pan Head (3A) (2 pcs.)
0E00752A	Eyelet 2x3 (6 pcs.)	
F1 F2,3 F4,5	BA04098B	Fuse P.C.B. Ass'y (UK & Australia)
	0B07842C	Fuse P.C.B.
	0B08665A	Fuse T 160mA 250V
	0B08263A	Fuse T 315mA 250V
	0B08347A	Fuse T 1A 250V
	0B08349A	Fuse Clip (10 pcs.)
	0B08240A	Spark Killer (1 pce.)
	0M04066A	Fuse Label 160mA 250V (1 pce.)
	0M04131A	Fuse Label 1A 250V x 2 (1 pce.)
	0M04074A	Fuse Label 315mA 250V x 2 (1 pce.)
	0J03834B	Fuse P.C.B. Holder (1 pce.)
0E00606A	Screw M3x6 Philips Pan Head (3A) (2 pcs.)	
0E00752A	Eyelet 2x3 (6 pcs.)	
F1 F2,3 F4,5	BA04105B	Fuse P.C.B. Ass'y (220V Class 2)
	0B07842C	Fuse P.C.B.
	0B08665A	Fuse T 160mA 250V
	0B08263A	Fuse T 315mA 250V
	0B08347A	Fuse T 1A 250V
0B08349A	Fuse Clip (10 pcs.)	

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

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

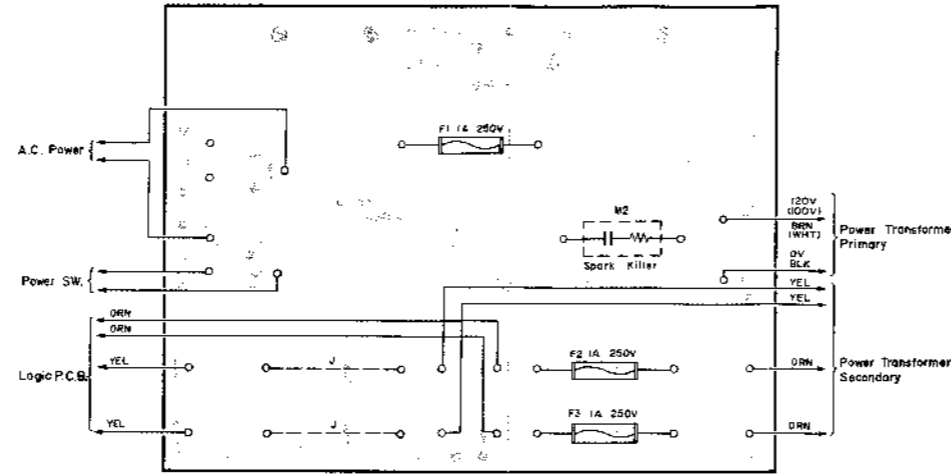


Fig. 7.1.1 U.S.A., Canada & Japan

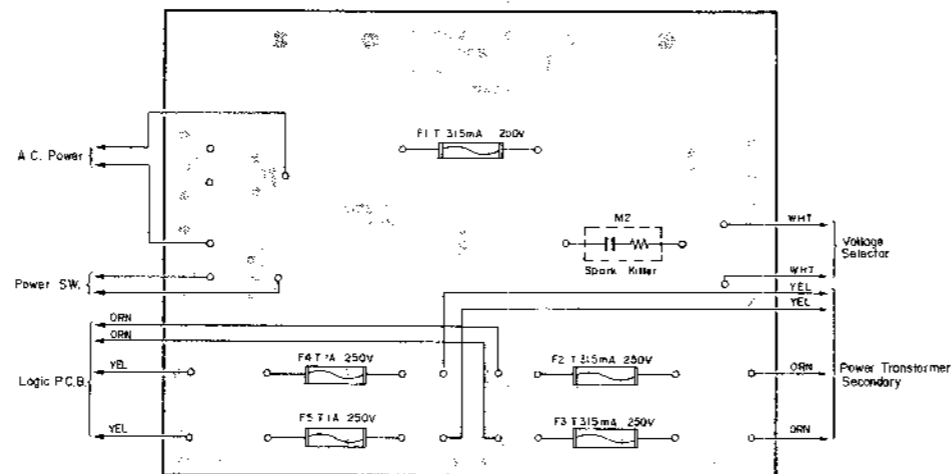


Fig. 7.1.2 Others

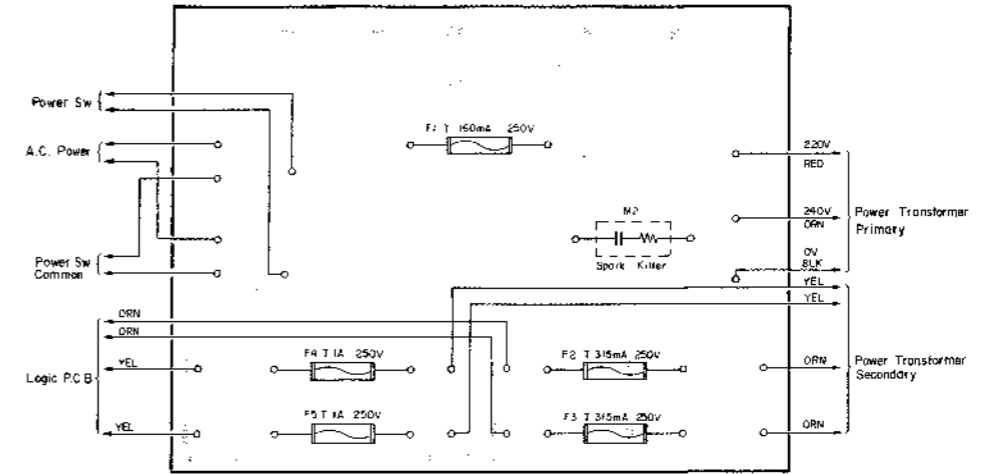


Fig. 7.1.3 UK & Australia

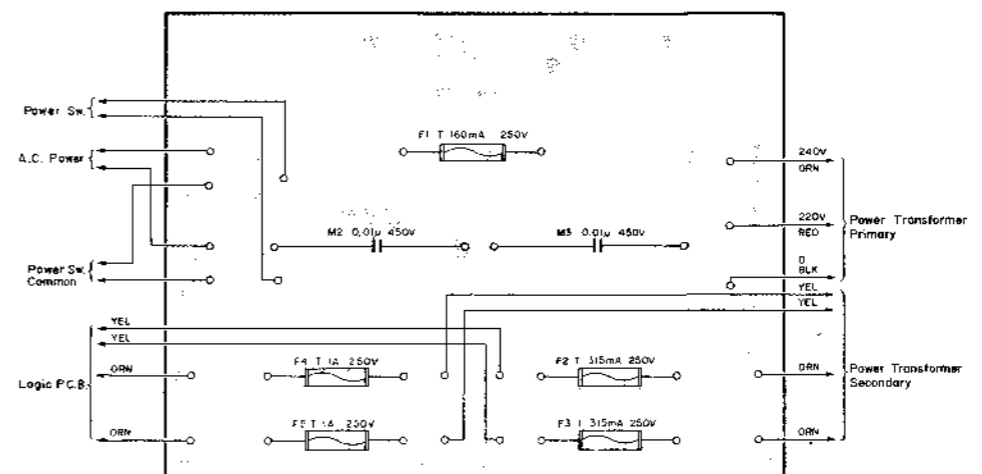


Fig. 7.1.4 220V Class 2

Schematic Ref. No.	Part No.	Description
	0B08445A	Spark Killer (2 pcs.)
	0M04066A	Fuse Label 160mA 250V (1 pce.)
	0M04131A	Fuse Label 1A 250V x 2 (1 pce.)
	0M04074A	Fuse Label 315mA 250V x 2 (1 pce.)
	0J03834B	Fuse P.C.B. Holder (1 pce.)
	0E00606A	Screw M3x6 Philips Pan Head (3A) (2 pcs.)
	0E00752A	Eyelet 2x3 (6 pcs.)

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

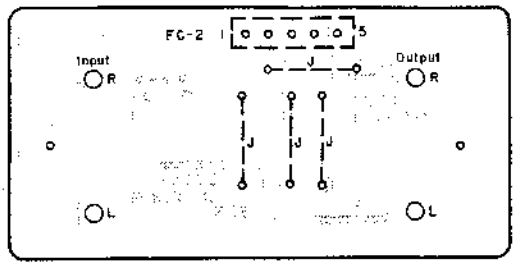


Fig. 7.2

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

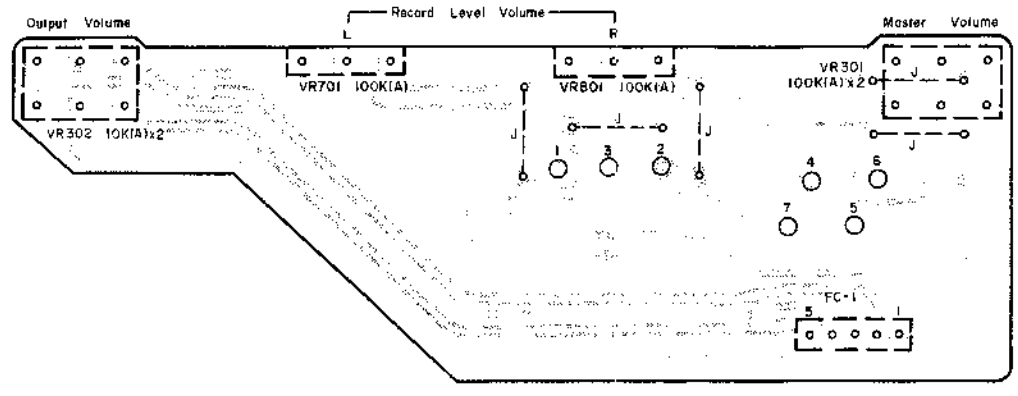


Fig. 7.3

7.4. Calibration Indicator P.C.B. Ass'y

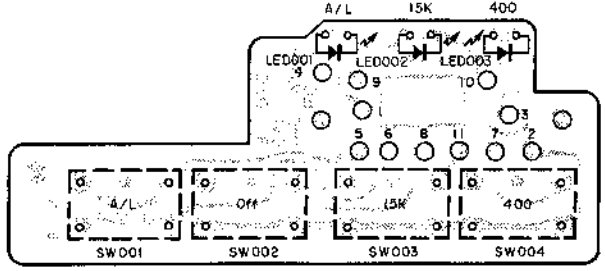


Fig. 7.4

7.5. Bias Cal. P.C.B. Ass'y

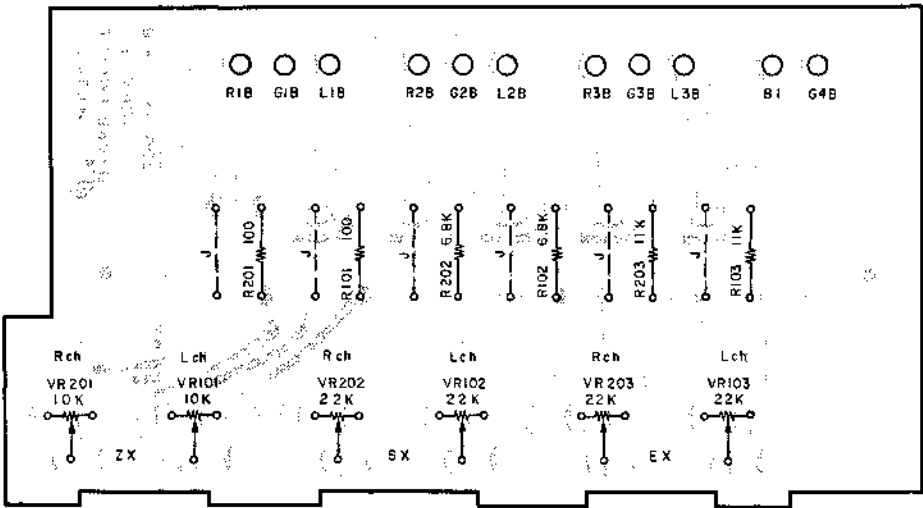


Fig. 7.5

7.6. FL Indicator P.C.B. Ass'y

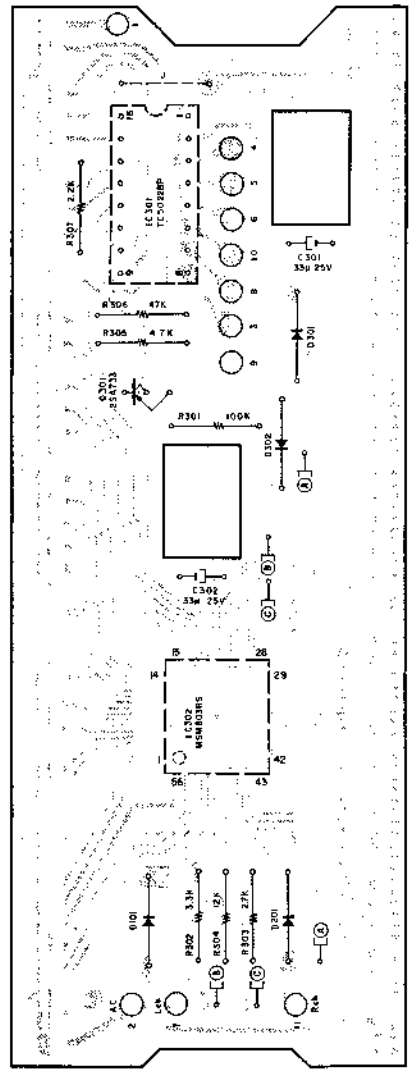


Fig. 7.6 Note: Diode is 1SS53 unless otherwise specified.

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

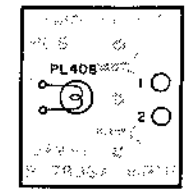


Fig. 7.7

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

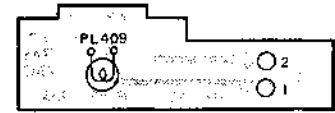


Fig. 7.8

Schematic Ref. No.	Part No.	Description
FC2	BA04485A	Pin Jack P.C.B. Ass'y
	OB07983A	Pin Jack P.C.B.
	OB05238A	5P Flat Cable
	OB08709A	Jack Unit (1 pce.)
	OE00037A	Earth Lug B-5 (1 pce.)
VR301 VR302 VR701,801 FC1	BA04469A	Volume P.C.B. Ass'y
	OB07982A	Volume P.C.B.
	OB07203A	Volume 100K (A) x 2
	OB07204A	Volume 10K (A) x 2
	OB07202A OB05238A	Volume 100K (A) 5P Flat Cable
LED001, 002,003 CN9	BA04466A	Calibration Indicator P.C.B. Ass'y
	OB07976B OB06306A	Calibration Indicator P.C.B. LED
	OB08892A OB07354A	11P-H Connector Push Switch (4 pcs.)
	BA04468A	Bias Cal. P.C.B. Ass'y
VR101,201 VR102,103 202,203 R101,201 R102,202 R103,203	OB07981A OB07319A OB07276A	Bias Cal. P.C.B. Semi-fixed Volume 10K Semi-fixed Volume 22K
	OB01679A	Carbon Resistor 100 ERD-25T J
	OB01682A	Carbon Resistor 6.8K ERD-25T J
	OB09334A	Carbon Resistor 11K ERD-25T J
	BA04459A	FL Indicator P.C.B. Ass'y
IC301 IC302 Q301 D101,201 301,302 R301 R302 R303 R304 R305 R306 R307 C301,302 CN8	OB07988A	FL Indicator P.C.B.
	OB06211A	IC TC5022BP
	OB06305A	IC MSM803RS
	OB06013A	Transistor 2SA733
	OB06181A	Silicon Diode 1SS53
	OB01889A	Carbon Resistor 100K ERD-25T J
	OB01681A	Carbon Resistor 3.3K ERD-25T J
	OB05629A	Carbon Resistor 2.7K ERD-25T J
	OB09263A	Carbon Resistor 12K ERD-25T J
	OB01846A	Carbon Resistor 4.7K ERD-25T J
OB05641A	Carbon Resistor 47K ERD-25T J	
OB05622A	Carbon Resistor 2.2K ERD-25T J	
OB09251A	Electrolytic Capacitor 33µ 25V	
OB08893A	11P-H Connector B	
OB08894A	FL Indicator FIP38AW13YS (1 pce.)	
OJ04415A	Free Bushing 70mm (1 pce.)	
PL408	BA04062A	Lamp P.C.B. B Ass'y
	OB07838A OB08586A	Lamp P.C.B. B Lamp 12V 60mA
PL409	BA04063A	Lamp P.C.B. C Ass'y
	OB07840A OB08586A	Lamp P.C.B. C Lamp 12V 60mA

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

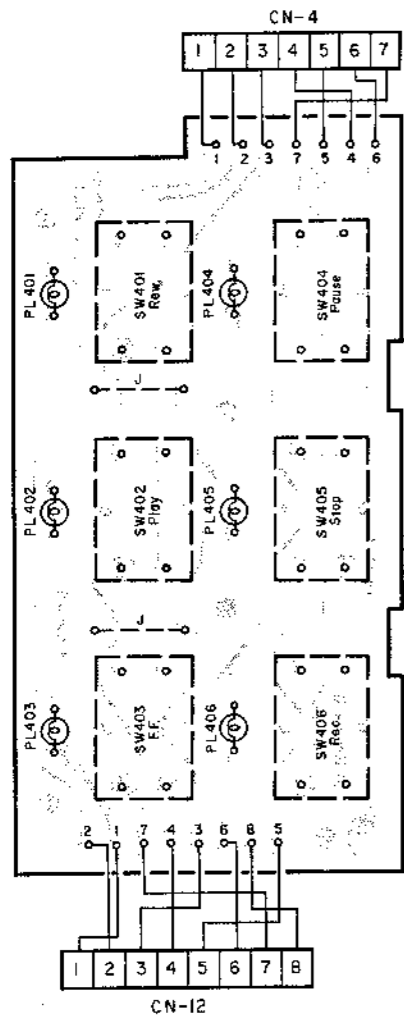


Fig. 7.9

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

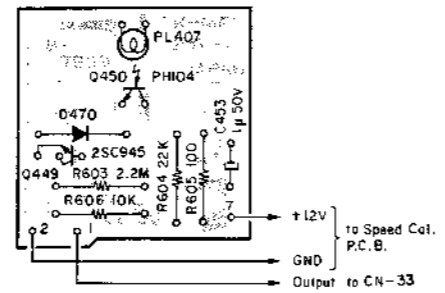


Fig. 7.10

Note: Diode is 1SS53 unless otherwise specified.

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

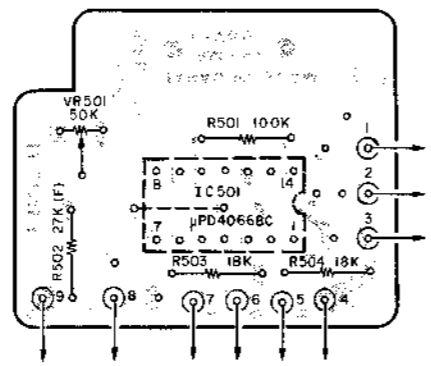


Fig. 7.11

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

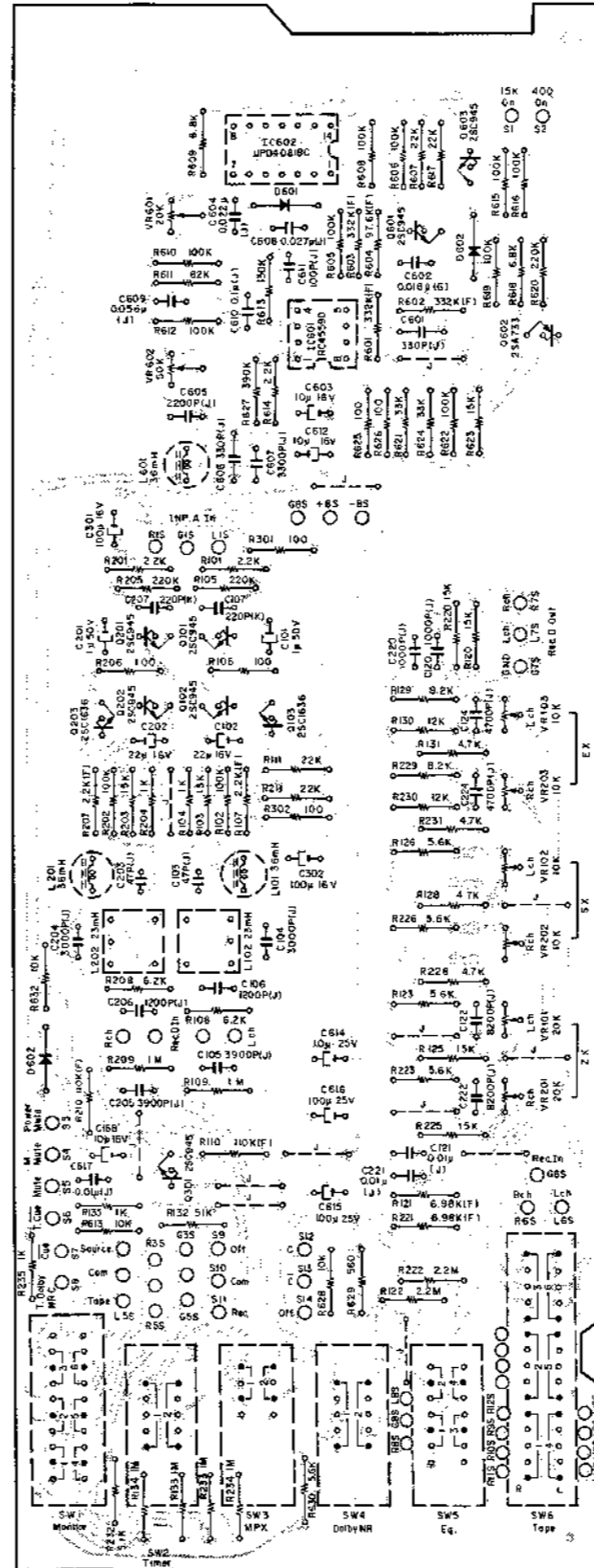


Fig. 7.12.1 Serial No.: A12202862 -

Note: Diode is 1SS53 unless otherwise specified.

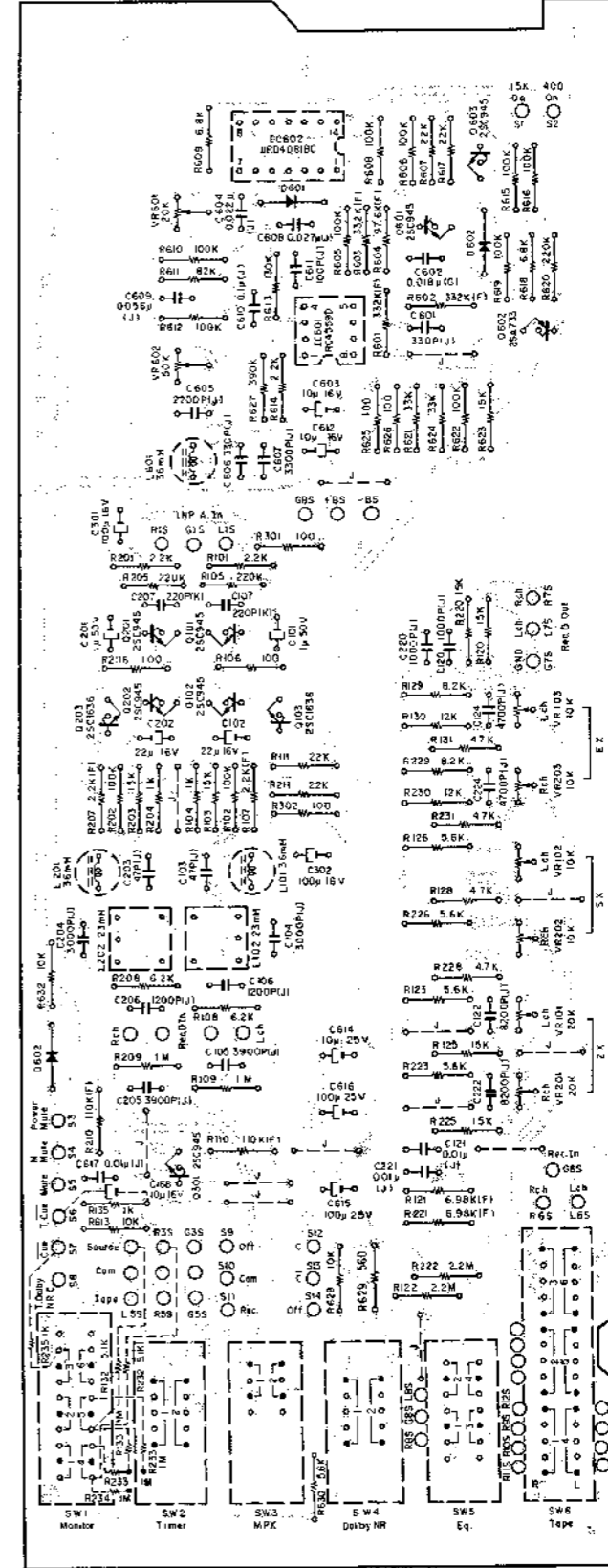


Fig. 7.12.2 Serial Nos.: A12201001 - A12202861

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04071A	Control Switch P.C.B. Ass'y		BA04238A	Speed Cal. P.C.B. Ass'y
SW401-406	0B07832A	Control Switch P.C.B. (6 pcs.)	IC501	0B07893B	Speed Cal. P.C.B. IC µPD4066BC
PL401-406	0B07219A	Semi-Switch (6 pcs.)	VR501	0B07269A	Semi-fixed Volume 50K
CN4	0B08552A	Lamp 12V 25mA (6 pcs.)	R501	0B01889A	Carbon Resistor 100K ERD-25T J
CN12	0B08631B	7P-H Connector A Ass'y	R502	0B09444A	Metal Film Resistor 27K SN14K2E F
	0B08630B	8P-H Connector A Ass'y	R503,504	0B05560A	Carbon Resistor 18K ERD-25T J
	BA04070A	Shut-off P.C.B. Ass'y			
Q449	0B07839A	Shut-off P.C.B. Transistor 2SC945 (L)			
Q450	0B01872A	Photo Transistor PH104			
D470	0B06181A	Silicon Diode 1SS53			
R603	0B05671A	Carbon Resistor 2.2M ERD-25T J			
R604	0B05615A	Carbon Resistor 22K ERD-25T J			
R605	0B09215A	Fail Safe Type Resistor 100 RDF-25S J			
R606	0B01888A	Carbon Resistor 10K ERD-25T J			
C453	0B01405A	Electrolytic Capacitor 1µ 50V			
PL407	0B08552A	Lamp 12V 25mA			

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04463A	Main P.C.B. Ass'y Serial No.: A12202862 -	R145,245	0B05936A	Carbon Resistor 10 ERD-25T J	R160,161	0B05625A	Carbon Resistor 220K ERD-25T J
			R305,306	0B09213A	Fail Safe Type Resistor 150 RDF-25S J	260,261		
			R314	0B05776A	Carbon Resistor 1M ERD-25T J	R162,262	0B01856A	Carbon Resistor 8.2K ERD-25T J
			C122,222	0B05583A	Mylar Capacitor 0.033μ 50V J	R163,263	0B05622A	Carbon Resistor 2.2K ERD-25T J
			C123,223	0B09223A	Electrolytic Capacitor 1μ 50V (LN)	R164,264	0B05627A	Carbon Resistor 330K ERD-25T J
Q104,105	0B06180A	Transistor 2SA970 (GR)	C124,224	0B05659A	Mylar Capacitor 5600P 50V J	311		
204,205			C125,225	0B01412A	Electrolytic Capacitor 10μ 16V	R165,265	0B01888A	Carbon Resistor 10K ERD-25T J
Q106,206	0B06142A	Transistor 2SC2240 (BL)	C126,226	0B05685A	Mylar Capacitor 0.082μ 50V J	324,325		
L104,204	0B00068A	Trap Coil 10.5mH	C127,227	0B01914A	Mylar Capacitor 3300P 50V J	R166,266	0B05936A	Carbon Resistor 10 ERD-25T J
VR101,201	0B07233A	Semi-fixed Volume 10K	C128,228	0B09247A	Mica Capacitor 220P 50V J	R167,267	0B01889A	Carbon Resistor 100K ERD-25T J
R116,216	0B05625A	Carbon Resistor 220K ERD-25T J	C129,229	0B09286A	Ceramic Capacitor 470P 50V K	331		
R117,217	0B01889A	Carbon Resistor 100K ERD-25T J	C130,230	0B09332A	PP Capacitor 330P 100V J	R309,310	0B09215A	Fail Safe Type Resistor 100 RDF-25S J
R118,218	0B05631A	Carbon Resistor 82 ERD-25T J	C305,306	0B01502A	Electrolytic Capacitor 330μ 16V	R312,313	0B05671A	Carbon Resistor 2.2M ERD-25T J
R119,219	0B09309A	Carbon Resistor 2.2K ERD-25T J (Noiseless)				C136,236	0B09222A	Electrolytic Capacitor 0.47μ 50V (LN)
						C137,237	0B09218A	Electrolytic Capacitor 47μ 16V (LN)
R120,220	0B09431A	Metal Film Resistor 8.06K SN14K2E F				C138,238	0B09147A	Electrolytic Capacitor 3.3μ 50V (LN)
R122,222	0B09310A	Carbon Resistor 33K ERD-25T J (Noiseless)	IC305	0B06217A	IC RC4560D	C309,310	0B01403A	Electrolytic Capacitor 47μ 16V
			Q109,209	0B06066A	Transistor 2SD471			
R123,223	0B05620A	Carbon Resistor 270K ERD-25T J	Q110,210	0B06069A	Transistor 2SB564			
R124,224	0B01706A	Carbon Resistor 47 ERD-25T J	R146,148	0B01889A	Carbon Resistor 100K ERD-25T J			
R125,225	0B09388A	Carbon Resistor 5.1K ERD-25T J (Noiseless)	R147,247	0B01706A	Carbon Resistor 47 ERD-25T J			
			R149,249	0B09321A	Fail Safe Type Resistor 4.7 RDF-25S J	Q301,302	0B01872A	Transistor 2SC945 (L)
R126,226	0B09311A	Carbon Resistor 68K ERD-25T J (Noiseless)	R307,308	0B09216A	Fail Safe Type Resistor 10 RDF-25S J	Q303	0B06202A	Transistor 2SA562 (Y)
			C131,231	0B09291A	Ceramic Capacitor 0.022μ 50V Z	Q304	0B06013A	Transistor 2SA733
R127,227	0B05575A	Carbon Resistor 560 ERD-25T J	C307,308	0B01400A	Electrolytic Capacitor 100μ 16V	L301	0B06613A	Osc. Coil
R128,228	0B05691A	Carbon Resistor 390 ERD-25T J				R315,316	0B09212A	Fail Safe Type Resistor 2.2 RDF-25S J
R129,229	0B01888A	Carbon Resistor 10K ERD-25T J				R317,318	0B05668A	Carbon Resistor 82K ERD-25T J
R130,131	0B05614A	Carbon Resistor 1.8K ERD-25T J				R319	0B09295A	Fail Safe Type Resistor 82 RSF-2B J
230,231						R320	0B09296A	Fail Safe Type Resistor 39 RSF-1/2B J
C111,211	0B09218A	Electrolytic Capacitor 47μ 16V (LN)				R321	0B01682A	Carbon Resistor 6.8K ERD-25T J
C112,114	0B09281A	Ceramic Capacitor 150P 50V K	IC304	0B06146A	IC RC4558DD	R322	0B05692A	Carbon Resistor 68K ERD-25T J
212,214			Q103,203	0B01872A	Transistor 2SC945 (L)	R323	0B05509A	Carbon Resistor 33K ERD-25T J
C113,213	0B09151A	Electrolytic Capacitor 220μ 6.3V (LN)	L103,203	0B03919B	Inductor 36mH	C315	0B01402A	Electrolytic Capacitor 4.7μ 25V
C115,215	0B0557A	Mylar Capacitor 0.015μ 50V J	R101,106	0B01857A	Carbon Resistor 1K ERD-25T J	C316,317	0B09191A	PP Capacitor 4700P 100V G
C116,216	0B09187A	Electrolytic Capacitor 1μ 50V (BP)	201,206			C318	0B09405A	PP Capacitor 0.022μ 100V J
C117,217	0B09247A	Mica Capacitor 220P 50V J	R102,104	0B05625A	Carbon Resistor 220K ERD-25T J	C319	0B09254A	PP Capacitor 0.068μ 100V J
C118,218	0B01804A	Mylar Capacitor 3900P 50V J	202,204				0J04417A	Osc. Coil Shield Plate (1 pce.)
C119,120	0B01403A	Electrolytic Capacitor 47μ 16V	R103,203	0B09507A	Metal Film Resistor 3.57K SN14K2E F			
219,220			R105,205	0B09582A	Metal Film Resistor 43.2K SN14K2E F			
			R107,207	0B01888A	Carbon Resistor 10K ERD-25T J			
			R108,208	0B05575A	Carbon Resistor 560 ERD-25T J			
			R153,253	0B05622A	Carbon Resistor 2.2K ERD-25T J			
			R303,304	0B09210A	Fail Safe Type Resistor 33 RDF-25S J	Q111,112	0B07977C	Main P.C.B.
IC302	0B06146A	IC RC4558DD	R332	0B05509A	Carbon Resistor 33K ERD-25T J	211,212	0B06070A	Transistor 2SC1636
Q107,108	0B06070A	Transistor 2SC1636	R333	0B05627A	Carbon Resistor 330K ERD-25T J	Q306,307	0B06013A	Transistor 2SA733
207,208			C107,207	0B09223A	Electrolytic Capacitor 1μ 50V (LN)	D107,207	0B06181A	Silicon Diode 1SS53
D102,103	0B06181A	Silicon Diode 1SS53	C108,208	0B09148A	Electrolytic Capacitor 10μ 25V (LN)	304,305		
104,202			C109,209	0B09409A	PP Capacitor 1800P 100V G	R150,250	0B05691A	Carbon Resistor 390 ERD-25T J
203,204			C133,233	0B09222A	Electrolytic Capacitor 0.47μ 50V (LN)	R151,251	0B01682A	Carbon Resistor 6.8K ERD-25T J
301,302			C303,304	0B01400A	Electrolytic Capacitor 100μ 16V	R152,252	0B01888A	Carbon Resistor 10K ERD-25T J
L105,106	0B00068A	Trap Coil 10.5mH				R301,302	0B09214A	Fail Safe Type Resistor 1 RDF-25S J
205,206						R326,328	0B05620A	Carbon Resistor 270K ERD-25T J
R133,136	0B01683A	Carbon Resistor 15K ERD-25T J				R327	0B05692A	Carbon Resistor 68K ERD-25T J
233,236						R329,330	0B01889A	Carbon Resistor 100K ERD-25T J
R134,234	0B01679A	Carbon Resistor 100 ERD-25T J	IC301	0B06216A	IC μPC4556C	R335	0B09603A	Fail Safe Type Resistor 0.2ERX-12AN J
R135,138	0B05640A	Carbon Resistor 180K ERD-25T J	IC303	0B06144A	IC μPD4066BC	C132,232	0B09187A	Electrolytic Capacitor 1μ 50V (BP)
235,238			Q305	0B01872A	Transistor 2SC945 (L)	C301,302	0B01397A	Electrolytic Capacitor 1000μ 16V
R137,237	0B05675A	Carbon Resistor 3.9K ERD-25T J	ZD101,201	0B06058A	Zener Diode 5.1V YZ051	CN1,2	0B08654A	4P-T Post
R139,239	0B01854A	Carbon Resistor 39K ERD-25T J	D105,106	0B06181A	Silicon Diode 1SS53	CN3	0B08656A	2P-T Post
R140,240	0B05691A	Carbon Resistor 390 ERD-25T J	205,206					
R141,142	0B05615A	Carbon Resistor 22K ERD-25T J	303,306					
241,242			308					
R143,243	0B05614A	Carbon Resistor 1.8K ERD-25T J	VR102,202	0B07269A	Semi-fixed Volume 50K			
R144,244	0B01888A	Carbon Resistor 10K ERD-25T J	VR103,203	0B07341A	Semi-fixed Volume 5K			

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

Note: Diode is 1S53 unless otherwise specified.

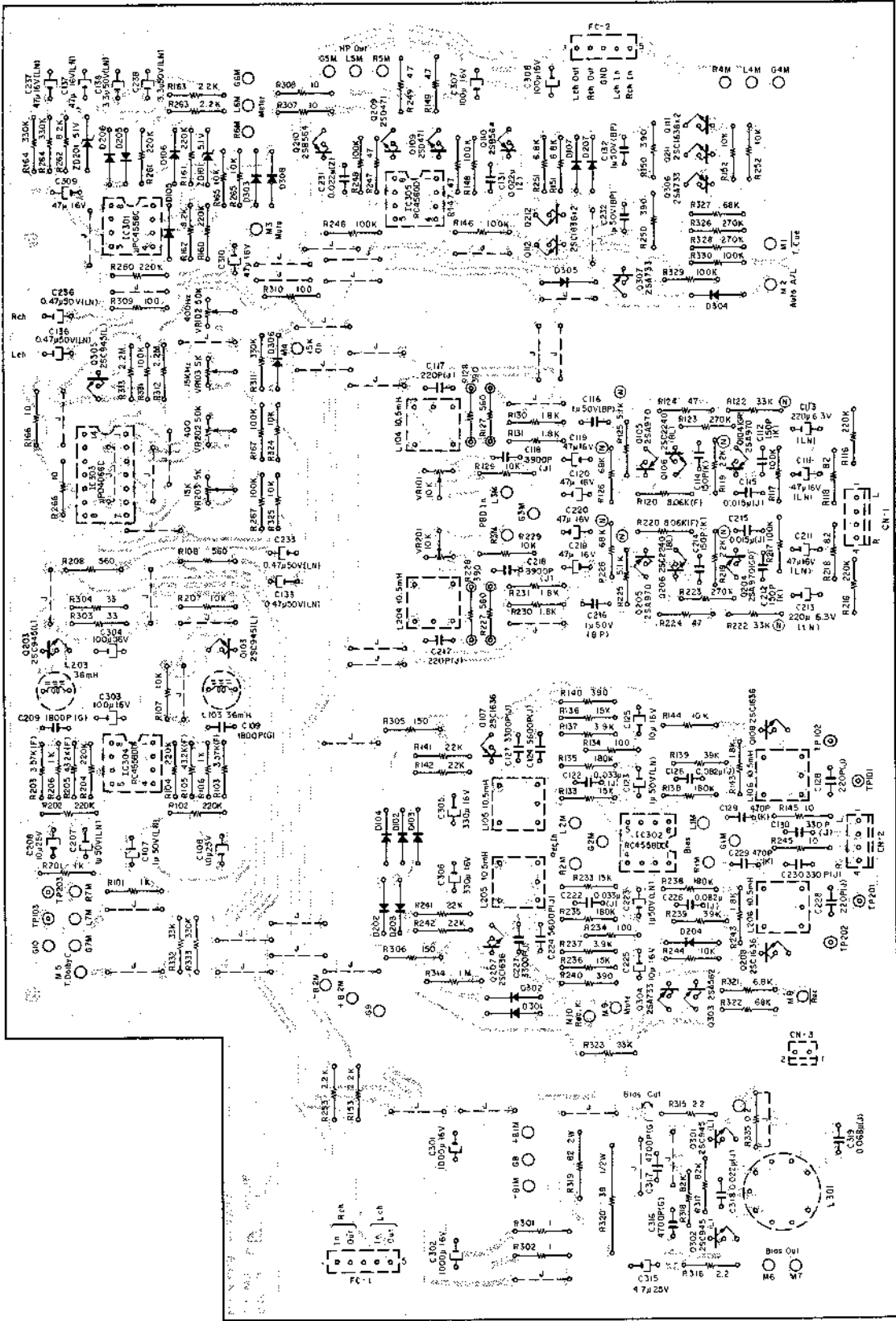


Fig. 7.13.1 Serial No.: A12202862 -

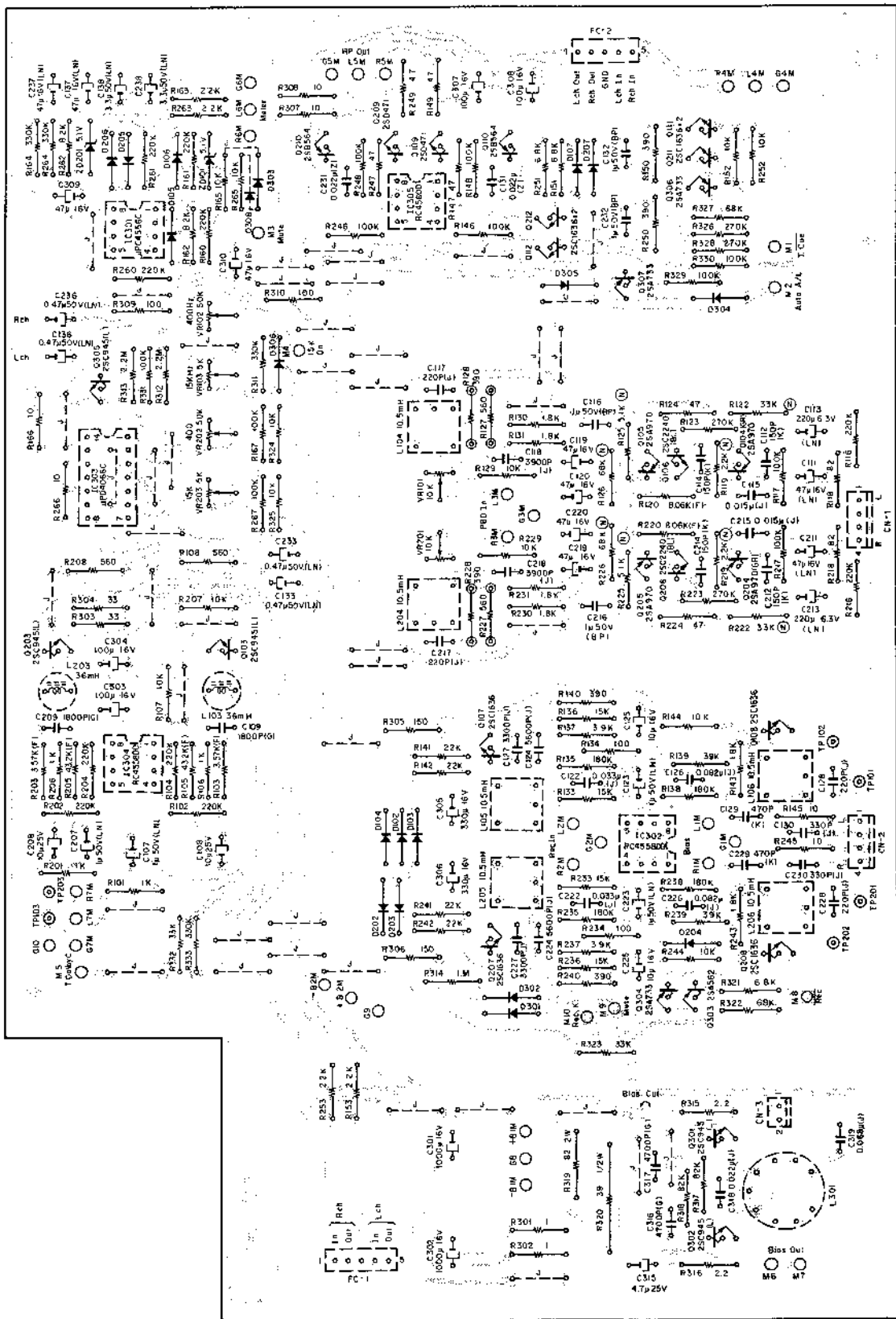


Fig. 7.13.2 Serial Nos.: A12201001 – A12202861

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
	BA04463A	Main P.C.B. Ass'y Serial Nos.: A12201001 - A12202861	R145,245	OB05936A	Carbon Resistor 10 ERD-25T J	R160,161	OB05625A	Carbon Resistor 220K ERD-25T J
			R305,306	OB09213A	Fail Safe Type Resistor 150 RDF-25S J	260,261		
			R314	OB05776A	Carbon Resistor 1M ERD-25T J	R162,262	OB01856A	Carbon Resistor 8.2K ERD-25T J
	- PB Eq. Amp. -		C122,222	OB05583A	Mylar Capacitor 0.033μ 50V J	R163,263	OB05622A	Carbon Resistor 2.2K ERD-25T J
Q104,105	OB06180A	Transistor 2SA970 (GR)	C123,223	OB09223A	Electrolytic Capacitor 1μ 50V (LN)	R164,264	OB05627A	Carbon Resistor 330K ERD-25T J
204,205			C124,224	OB05659A	Mylar Capacitor 5600P 50V J	311		
Q106,206	OB06142A	Transistor 2SC2240 (BL)	C125,225	OB01412A	Electrolytic Capacitor 10μ 16V	R165,265	OB01888A	Carbon Resistor 10K ERD-25T J
L104,204	OB00068A	Trap Coil 10.5mH	C126,226	OB05685A	Mylar Capacitor 0.082μ 50V J	324,325		
VR101,201	OB07233A	Semi-fixed Volume 10K	C127,227	OB01914A	Mylar Capacitor 3300P 50V J	R166,266	OB05936A	Carbon Resistor 10 ERD-25T J
R116,216	OB05625A	Carbon Resistor 220K ERD-25T J	C128,228	OB09247A	Mica Capacitor 220P 50V J	R167,267	OB01889A	Carbon Resistor 100K ERD-25T J
R117,217	OB01889A	Carbon Resistor 100K ERD-25T J	C129,229	OB09286A	Ceramic Capacitor 470P 50V K	331		
R118,218	OB05631A	Carbon Resistor 82 ERD-25T J	C130,230	OB09332A	PP Capacitor 330P 100V J	R309,310	OB09215A	Fail Safe Type Resistor 100 RDF-25S J
R119,219	OB09309A	Carbon Resistor 2.2K ERD-25T J (Noiseless)	C305,306	OB01502A	Electrolytic Capacitor 330μ 16V	R312,313	OB05671A	Carbon Resistor 2.2M ERD-25T J
						C136,236	OB09222A	Electrolytic Capacitor 0.47μ 50V (LN)
R120,220	OB09431A	Metal Film Resistor 8.06K SN14K2E F		- Headphone Amp. -		C137,237	OB09218A	Electrolytic Capacitor 47μ 16V (LN)
R122,222	OB09310A	Carbon Resistor 33K ERD-25T J (Noiseless)	IC305	OB06217A	IC RC4560D	C138,238	OB09147A	Electrolytic Capacitor 3.3μ 50V (LN)
R123,223	OB05620A	Carbon Resistor 270K ERD-25T J	Q109,209	OB06066A	Transistor 2SD471	C309,310	OB01403A	Electrolytic Capacitor 47μ 16V
R124,224	OB01706A	Carbon Resistor 47 ERD-25T J	Q110,210	OB06069A	Transistor 2SB564			
R125,225	OB09388A	Carbon Resistor 5.1K ERD-25T J (Noiseless)	R146,148	OB01889A	Carbon Resistor 100K ERD-25T J		- Bias Osc. -	
R126,226	OB09311A	Carbon Resistor 68K ERD-25T J (Noiseless)	246,248			Q301,302	OB01872A	Transistor 2SC945 (L)
R127,227	OB05575A	Carbon Resistor 560 ERD-25T J	R147,247	OB01706A	Carbon Resistor 47 ERD-25T J	Q303	OB06202A	Transistor 2SA562 (Y)
R128,228	OB05691A	Carbon Resistor 390 ERD-25T J	R149,249	OB09321A	Fail Safe Type Resistor 4.7 RDF-25S J	Q304	OB06013A	Transistor 2SA733
R129,229	OB01888A	Carbon Resistor 10K ERD-25T J	R307,308	OB09216A	Fail Safe Type Resistor 10 RDF-25S J	L301	OB06613A	Osc. Coil
R130,131	OB05614A	Carbon Resistor 1.8K ERD-25T J	C131,231	OB09291A	Ceramic Capacitor 0.022μ 50V Z	R315,316	OB09212A	Fail Safe Type Resistor 2.2 RDF-25S J
230,231			C307,308	OB01400A	Electrolytic Capacitor 100μ 16V	R317,318	OB05688A	Carbon Resistor 82K ERD-25T J
C111,211	OB09218A	Electrolytic Capacitor 47μ 16V (LN)		- Line Amp. -		R319	OB09296A	Fail Safe Type Resistor 82 RSF-2B J
C112,114	OB09281A	Ceramic Capacitor 150P 50V K	IC304	OB06146A	IC RC4558DD	R320	OB09296A	Fail Safe Type Resistor 39 RSF-1/2B J
212,214			Q103,203	OB01872A	Transistor 2SC945 (L)	R321	OB01682A	Carbon Resistor 6.8K ERD-25T J
C113,213	OB09151A	Electrolytic Capacitor 220μ 6.3V (LN)	L103,203	OB03919B	Inductor 36mH	R322	OB05692A	Carbon Resistor 68K ERD-25T J
C116,216	OB05557A	Mylar Capacitor 0.015μ 50V J	R101,106	OB01857A	Carbon Resistor 1K ERD-25T J	R323	OB05509A	Carbon Resistor 33K ERD-25T J
C116,216	OB09187A	Electrolytic Capacitor 1μ 50V (8P)	201,206			C315	OB01402A	Electrolytic Capacitor 4.7μ 25V
C117,217	OB09247A	Mica Capacitor 220P 50V J	R102,104	OB05625A	Carbon Resistor 220K ERD-25T J	C316,317	OB09191A	PP Capacitor 4700P 100V G
C118,218	OB01804A	Mylar Capacitor 3900P 50V J	202,204			C318	OB09405A	PP Capacitor 0.022μ 100V J
C119,120	OB01403A	Electrolytic Capacitor 47μ 16V	R103,203	OB09507A	Metal Film Resistor 3.57K SN14K2E F	C319	OB09254A	PP Capacitor 0.068μ 100V J
219,220			R105,205	OB09582A	Metal Film Resistor 43.2K SN14K2E F	QJ04417A		Osc. Coil Shield Plate (1 pce.)
			R107,207	OB01888A	Carbon Resistor 10K ERD-25T J		- Miscellaneous -	
	- Rec. Amp. -		R108,208	OB05575A	Carbon Resistor 560 ERD-25T J	OB07977A	OB07977A	Main P.C.B.
IC302	OB06146A	IC RC4558DD	R153,253	OB05622A	Carbon Resistor 2.2K ERD-25T J	OB06070A	OB06070A	Transistor 2SC1636
Q107,108	OB06070A	Transistor 2SC1636	R303,304	OB09210A	Fail Safe Type Resistor 33 RDF-25S J			
D102,103			R332	OB05509A	Carbon Resistor 33K ERD-25T J	Q111,112		
104,202	OB06181A	Silicon Diode 1SS53	R333	OB05627A	Carbon Resistor 330K ERD-25T J	211,212		
203,204			C107,207	OB09223A	Electrolytic Capacitor 1μ 50V (LN)	Q306,307	OB06013A	Transistor 2SA733
301,302			C108,208	OB09148A	Electrolytic Capacitor 10μ 25V (LN)	D107,207	OB06181A	Silicon Diode 1SS53
L105,106	OB00068A	Trap Coil 10.5mH	C109,209	OB09409A	PP Capacitor 1800P 100V G	304,306		
205,206			C133,233	OB09222A	Electrolytic Capacitor 0.47μ 50V (LN)	R150,250	OB05691A	Carbon Resistor 390 ERD-25T J
R133,136	OB01683A	Carbon Resistor 15K ERD-25T J	C303,304	OB01400A	Electrolytic Capacitor 100μ 16V	R151,251	OB01682A	Carbon Resistor 6.8K ERD-25T J
233,236				- Meter Amp. -		R152,252	OB01888A	Carbon Resistor 10K ERD-25T J
R134,234	OB01679A	Carbon Resistor 100 ERD-25T J	IC301	OB06216A	IC μPC4556C	R301,302	OB09214A	Fail Safe Type Resistor 1 RDF-25S J
R135,138	OB05640A	Carbon Resistor 180K ERD-25T J	IC303	OB06144A	IC μPD4066BC	R326,328	OB05620A	Carbon Resistor 270K ERD-25T J
235,238			Q305	OB01872A	Transistor 2SC945 (L)	R327	OB05692A	Carbon Resistor 68K ERD-25T J
R137,237	OB05675A	Carbon Resistor 3.9K ERD-25T J	ZD101,201	OB06058A	Zener Diode 5.1V YZ051	R329,330	OB01889A	Carbon Resistor 100K ERD-25T J
R139,239	OB01854A	Carbon Resistor 39K ERD-25T J	D105,106	OB06181A	Silicon Diode 1SS53	C132,232	OB09187A	Electrolytic Capacitor 1μ 50V (8P)
R140,240	OB05691A	Carbon Resistor 390 ERD-25T J	205,206			C301,302	OB01397A	Electrolytic Capacitor 1000μ 16V
R141,142	OB05615A	Carbon Resistor 22K ERD-25T J	303,306			CN1,2	OB08654A	4P-T Post
241,242			308			CN3	OB08656A	2P-T Post
R143,243	OB05614A	Carbon Resistor 1.8K ERD-25T J	VR102,202	OB07269A	Semi-fixed Volume 50K			
R144,244	OB01888A	Carbon Resistor 10K ERD-25T J	VR103,203	OB07341A	Semi-fixed Volume 5K			

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

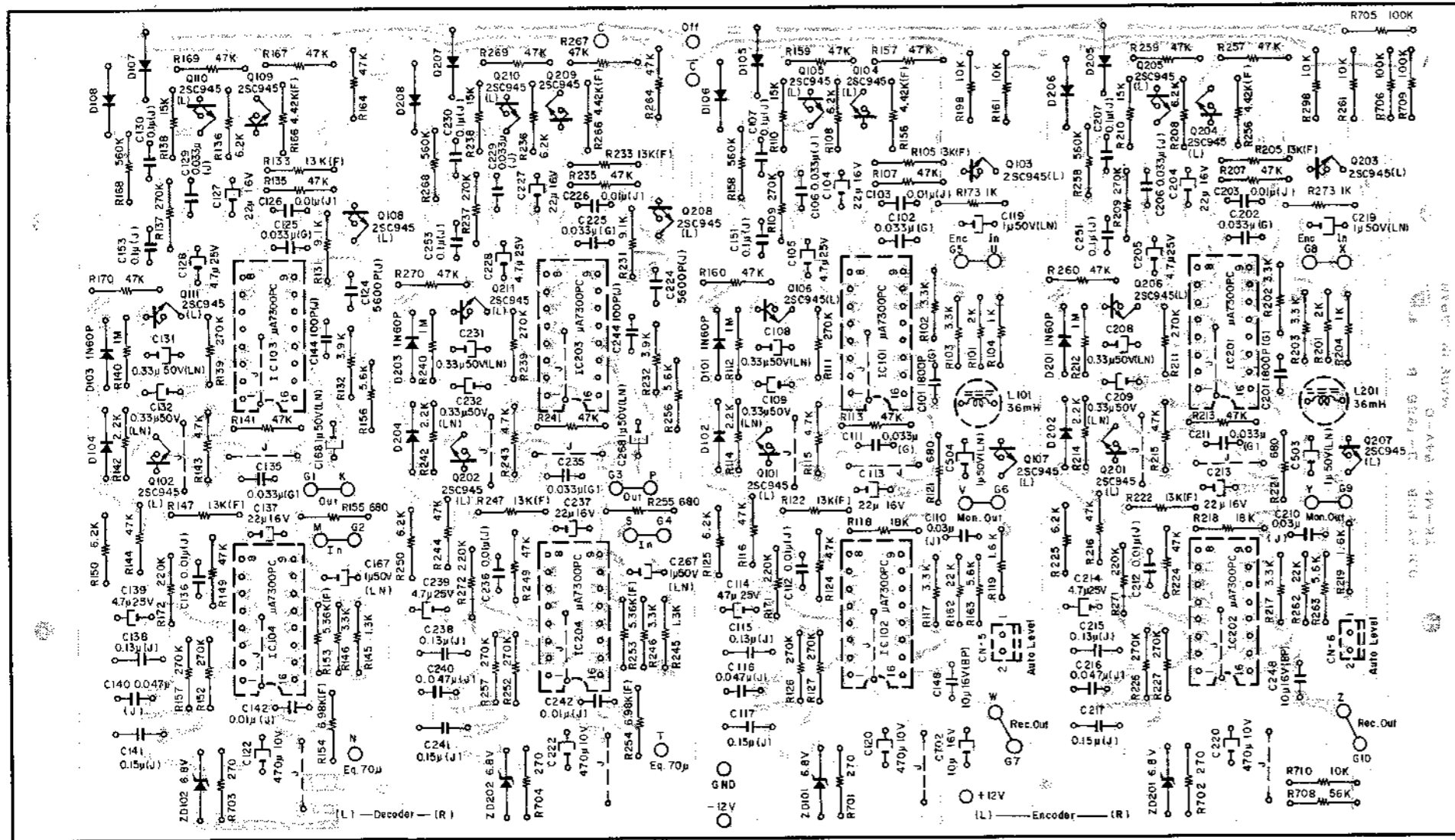


Fig. 7.14.1 Serial No.: A12202862 -

Note: Diode is 1SS53 unless otherwise specified.

Schematic Ref. No.	Part No.	Description
	BA04494A	Dolby NR P.C.B. Ass'y Serial No.: A12202862 -
		-BC PB Dolby NR -
IC103,104 203,204	0B06200A	IC μ A7300PC
Q102,108 109,110 111,202 208,209 210,211	0B01872A	Transistor 2SC945 (L)
ZD102,202	0B06315A	Zener Diode 6.8V YZ068
D103,203	0B00030A	Germanium Diode 1N60P
D104,107 108,204 207,208	0B06181A	Silicon Diode 1SS53
R131,231 R132,232 R133,147 233,247	0B09226A	Carbon Resistor 9.1K ERD-25T J
R135,141 144,149 164,167 169,170 235,241 244,249 264,267 269,270	0B05675A	Carbon Resistor 3.9K ERD-25T J
	0B09557A	Metal Film Resistor 13K SN14K2E F
R136,150 236,250	0B09271A	Carbon Resistor 6.2K ERD-25T J
R137,139 152,157 237,239 252,257	0B05620A	Carbon Resistor 270K ERD-25T J
R138,238 R140,240 R142,242 R143,243 R145,245 R146,246 R153,253 R154,254 R155,255 R156,256 R166,266 R168,268 R172,272 R703,704	0B01683A	Carbon Resistor 15K ERD-25T J
	0B05776A	Carbon Resistor 1M ERD-25T J
	0B05622A	Carbon Resistor 2.2K ERD-25T J
	0B01846A	Carbon Resistor 4.7K ERD-25T J
	0B09074A	Carbon Resistor 1.3K ERD-25T J
	0B01681A	Carbon Resistor 3.3K ERD-25T J
	0B09426A	Metal Film Resistor 5.36K SN14K2E F
	0B09604A	Metal Film Resistor 6.98K SN14K2E F
	0B05794A	Carbon Resistor 680 ERD-25T J
	0B01887A	Carbon Resistor 5.6K ERD-25T J
	0B09558A	Metal Film Resistor 4.42K SN14K2E F
	0B05784A	Carbon Resistor 560K ERD-25T J
	0B05625A	Carbon Resistor 220K ERD-25T J
	0B05645A	Carbon Resistor 270 ERD-25T J
C122,222	0B05884A	Electrolytic Capacitor 470 μ 10V
C124,224	0B05659A	Mylar Capacitor 5600P 50V J
C125,135 225,235	0B09240A	PP Capacitor 0.033 μ 100V G
C126,136 142,226 236,242	0B05681A	Mylar Capacitor 0.01 μ 50V J
C127,137 227,237	0B01862A	Electrolytic Capacitor 22 μ 16V
C128,138 228,238	0B01402A	Electrolytic Capacitor 4.7 μ 25V
C129,229	0B05583A	Mylar Capacitor 0.033 μ 50V J
C130,153 230,253	0B01780A	Mylar Capacitor 0.1 μ 50V J

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04494A	Dolby NR P.C.B. Ass'y Serial Nos.: A12201001 - A12202861	C131,132 231,232	0B09567A	Electrolytic Capacitor 0.33 μ 50V (LN)
	- BC PB Dolby NR -		C138,238	0B09566A	Mylar Capacitor 0.13 μ 50V J
IC103,104 203,204	0B06200A	IC μ A7300PC	C140,240	0B05796A	Mylar Capacitor 0.047 μ 50V J
Q102,108 109,110 111,202 208,209 210,211	0B01872A	Transistor 2SC945 (L)	C141,241	0B05914A	Mylar Capacitor 0.15 μ 50V J
ZD102,202	0B06315A	Zener Diode 6.8V YZ068	C144,244	0B09282A	Ceramic Capacitor 100P 50V K
D103,203	0B00030A	Germanium Diode 1N60P	C167,168	0B09223A	Electrolytic Capacitor 1 μ 50V (LN)
D104,107 108,204 207,208	0B06181A	Silicon Diode 1SS53	267,268	0B08714A	IC Socket 16P (4 pcs.)
R131,231	0B09226A	Carbon Resistor 9.1K ERD-25T J	- BC Rec. Dolby NR -		
R132,232	0B05675A	Carbon Resistor 3.9K ERD-25T J	IC101,102 201,202	0B06200A	IC μ A7300PC
R133,147 233,247	0B09557A	Metal Film Resistor 13K SN14K2E F	Q101,103 104,105 106,107	0B01872A	Transistor 2SC945 (L)
R135,141 144,149 164,167 169,170 235,241 244,249 264,267 269,270	0B05641A	Carbon Resistor 47K ERD-25T J	201,203 204,205 206,207		
R136,150 236,250	0B09271A	Carbon Resistor 6.2K ERD-25T J	ZD101,201	0B06315A	Zener Diode 6.8V YZ068
R137,139 152,157 237,239 252,257	0B05620A	Carbon Resistor 270K ERD-25T J	D101,201	0B00030A	Germanium Diode 1N60P
R138,238	0B01683A	Carbon Resistor 15K ERD-25T J	D102,105 106,202 205,206	0B06181A	Silicon Diode 1SS53
R140,240	0B05776A	Carbon Resistor 1M ERD-25T J	L101,201	0B03919A	Inductor 36mH
R142,242	0B05622A	Carbon Resistor 2.2K ERD-25T J	R101,201	0B09301A	Carbon Resistor 2K ERD-25T J
R143,243	0B01846A	Carbon Resistor 4.7K ERD-25T J	R102,103 117,202 203,217	0B01681A	Carbon Resistor 3.3K ERD-25T J
R145,245	0B09074A	Carbon Resistor 1.3K ERD-25T J	R104,173 204,273	0B01857A	Carbon Resistor 1K ERD-25T J
R146,246	0B01681A	Carbon Resistor 3.3K ERD-25T J	R105,122 205,222	0B09557A	Metal Film Resistor 13K SN14K2E F
R153,253	0B09426A	Metal Film Resistor 5.36K SN14K2E F	R107,113	0B05641A	Carbon Resistor 47K ERD-25T J
R154,254	0B09604A	Metal Film Resistor 6.98K SN14K2E F	116,124 157,159		
R155,255	0B05794A	Carbon Resistor 680 ERD-25T J	160,207 213,216 224,257 259,260	0B09271A	Carbon Resistor 6.2K ERD-25T J
R156,256	0B01887A	Carbon Resistor 5.6K ERD-25T J	R108,125 208,225	0B05620A	Carbon Resistor 270K ERD-25T J
R166,266	0B09558A	Metal Film Resistor 4.42K SN14K2E F	R109,111 126,127 209,211 226,227		
R168,268	0B05784A	Carbon Resistor 560K ERD-25T J	R110,210	0B01683A	Carbon Resistor 15K ERD-25T J
R172,272	0B05625A	Carbon Resistor 220K ERD-25T J	R112,212	0B05776A	Carbon Resistor 1M ERD-25T J
R703,704	0B05645A	Carbon Resistor 270 ERD-25T J	R114,214	0B05622A	Carbon Resistor 2.2K ERD-25T J
C122,222	0B05884A	Electrolytic Capacitor 470 μ 10V	R115,215	0B01846A	Carbon Resistor 4.7K ERD-25T J
C124,224	0B05659A	Mylar Capacitor 5600P 50V J	R118,218	0B05560A	Carbon Resistor 18K ERD-25T J
C125,135 225,235	0B09240A	PP Capacitor 0.033 μ 100V G	R119,219	0B09565A	Carbon Resistor 1.6K ERD-25T J
C126,136 142,226 236,242	0B05681A	Mylar Capacitor 0.01 μ 50V J	R121,221 R156,256 R158,258	0B05794A	Carbon Resistor 680 ERD-25T J
C127,137 227,237	0B01862A	Electrolytic Capacitor 22 μ 16V	R161,198 261,298 710	0B09558A	Metal Film Resistor 4.42K SN14K2E F
C128,139 228,239	0B01402A	Electrolytic Capacitor 4.7 μ 25V	R162,262	0B05784A	Carbon Resistor 560K ERD-25T J
C129,229	0B05583A	Mylar Capacitor 0.033 μ 50V J	R163,263	0B01888A	Carbon Resistor 10K ERD-25T J
C130,153 230,253	0B01780A	Mylar Capacitor 0.1 μ 50V J	R171,271 R701,702	0B05615A	Carbon Resistor 22K ERD-25T J
				0B01887A	Carbon Resistor 5.6K ERD-25T J
				0B05625A	Carbon Resistor 220K ERD-25T J
				0B05645A	Carbon Resistor 270 ERD-25T J

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
C131,132 231,232	0B09567A	Electrolytic Capacitor 0.33 μ 50V (LN)	R705,706 709	0B01889A	Carbon Resistor 100K ERD-25T J
C138,238	0B09566A	Mylar Capacitor 0.13 μ 50V J	R708	0B05508A	Carbon Resistor 56K ERD-25T J
C140,240	0B05796A	Mylar Capacitor 0.047 μ 50V J	C101,201	0B09409A	PP Capacitor 1800P 100V G
C141,241	0B05914A	Mylar Capacitor 0.15 μ 50V J	C102,111	0B09240A	PP Capacitor 0.033 μ 100V G
C144,244	0B09282A	Ceramic Capacitor 100P 50V K	202,211		
C167,168 267,268	0B09223A	Electrolytic Capacitor 1 μ 50V (LN)	C103,112	0B05681A	Mylar Capacitor 0.01 μ 50V J
	0B08714A	IC Socket 16P (4 pcs.)	203,212		
	- BC Rec. Dolby NR -		C104,113	0B01862A	Electrolytic Capacitor 22 μ 16V
			204,213		
IC101,102 201,202	0B06200A	IC μ A7300PC	C105,114	0B01402A	Electrolytic Capacitor 4.7 μ 25V
Q101,103 104,105 106,107 201,203 204,205 206,207	0B01872A	Transistor 2SC945 (L)	205,214		
ZD101,201	0B06315A	Zener Diode 6.8V YZ068	C106,206	0B05583A	Mylar Capacitor 0.033 μ 50V J
D101,201	0B00030A	Germanium Diode 1N60P	C107,151	0B01780A	Mylar Capacitor 0.1 μ 50V J
D102,105 106,202 205,206	0B06181A	Silicon Diode 1SS53	207,251		
L101,201	0B03919A	Inductor 36mH	C108,109	0B09567A	Electrolytic Capacitor 0.33 μ 50V (LN)
R101,201	0B09301A	Carbon Resistor 2K ERD-25T J	208,209		
R102,103 117,202 203,217	0B01681A	Carbon Resistor 3.3K ERD-25T J	C110,210	0B09594A	Mylar Capacitor 0.03 μ 50V J
R104,173 204,273	0B01857A	Carbon Resistor 1K ERD-25T J	C115,215	0B09566A	Mylar Capacitor 0.13 μ 50V J
R105,122 205,222	0B09557A	Metal Film Resistor 13K SN14K2E F	C116,216	0B05796A	Mylar Capacitor 0.047 μ 50V J
R107,113 116,124 157,159 160,207 213,216 224,257 259,260	0B05641A	Carbon Resistor 47K ERD-25T J	C117,217	0B05914A	Mylar Capacitor 0.15 μ 50V J
R108,125 208,225	0B09271A	Carbon Resistor 6.2K ERD-25T J	C119,219	0B09223A	Electrolytic Capacitor 1 μ 50V (LN)
R109,111 126,127 209,211 226,227	0B05620A	Carbon Resistor 270K ERD-25T J	503,504		
R110,210	0B01683A	Carbon Resistor 15K ERD-25T J	C120,220	0B05884A	Electrolytic Capacitor 470 μ 10V
R112,212	0B05776A	Carbon Resistor 1M ERD-25T J	C148,248	0B09163A	Electrolytic Capacitor 10 μ 16V (BP)
R114,214	0B05622A	Carbon Resistor 2.2K ERD-25T J	C702	0B01412A	Electrolytic Capacitor 10 μ 16V
R115,215	0B01846A	Carbon Resistor 4.7K ERD-25T J		0B08714A	IC Socket 16P (4 pcs.)
R118,218	0B05560A	Carbon Resistor 18K ERD-25T J		- Miscellaneous -	
R119,219	0B09565A	Carbon Resistor 1.6K ERD-25T J		0B07986B	Dolby NR P.C.B.
R121,221	0B05794A	Carbon Resistor 680 ERD-25T J			
R156,256	0B09558A	Metal Film Resistor 4.42K SN14K2E F			
R158,258	0B05784A	Carbon Resistor 560K ERD-25T J			
R161,198 261,298 710	0B01888A	Carbon Resistor 10K ERD-25T J			
R162,262	0B05615A	Carbon Resistor 22K ERD-25T J			
R163,263	0B01887A	Carbon Resistor 5.6K ERD-25T J			
R171,271	0B05625A	Carbon Resistor 220K ERD-25T J			
R701,702	0B05645A	Carbon Resistor 270 ERD-25T J			

Schematic Ref. No.	Part No.	Description
R705,706	0B01889A	Carbon Resistor 100K ERD-25T J
709		
R708	0B05508A	Carbon Resistor 56K ERD-25T J
C101,201	0B09409A	PP Capacitor 1800P 100V G
C102,111	0B09240A	PP Capacitor 0.033μ 100V G
202,211		
C103,112	0B05681A	Mylar Capacitor 0.01μ 50V J
203,212		
C104,113	0B01862A	Electrolytic Capacitor 22μ 16V
204,213		
C105,114	0B01402A	Electrolytic Capacitor 4.7μ 25V
205,214		
C106,206	0B05583A	Mylar Capacitor 0.033μ 50V J
C107,151	0B01780A	Mylar Capacitor 0.1μ 50V J
207,251		
C108,109	0B09567A	Electrolytic Capacitor 0.33μ 50V (LN)
208,209		
C110,210	0B09594A	Mylar Capacitor 0.03μ 50V J
C115,215	0B09566A	Mylar Capacitor 0.13μ 50V J
C116,216	0B05796A	Mylar Capacitor 0.047μ 50V J
C117,217	0B05914A	Mylar Capacitor 0.15μ 50V J
C119,219	0B09223A	Electrolytic Capacitor 1μ 50V (LN)
503,504		
C120,220	0B05884A	Electrolytic Capacitor 470μ 10V
C148,248	0B09163A	Electrolytic Capacitor 10μ 16V (BP)
C702	0B01412A	Electrolytic Capacitor 10μ 16V
	0B08714A	IC Socket 16P (4 pcs.)
-- Miscellaneous --		
	0B07986A	Dolby NR P.C.B.

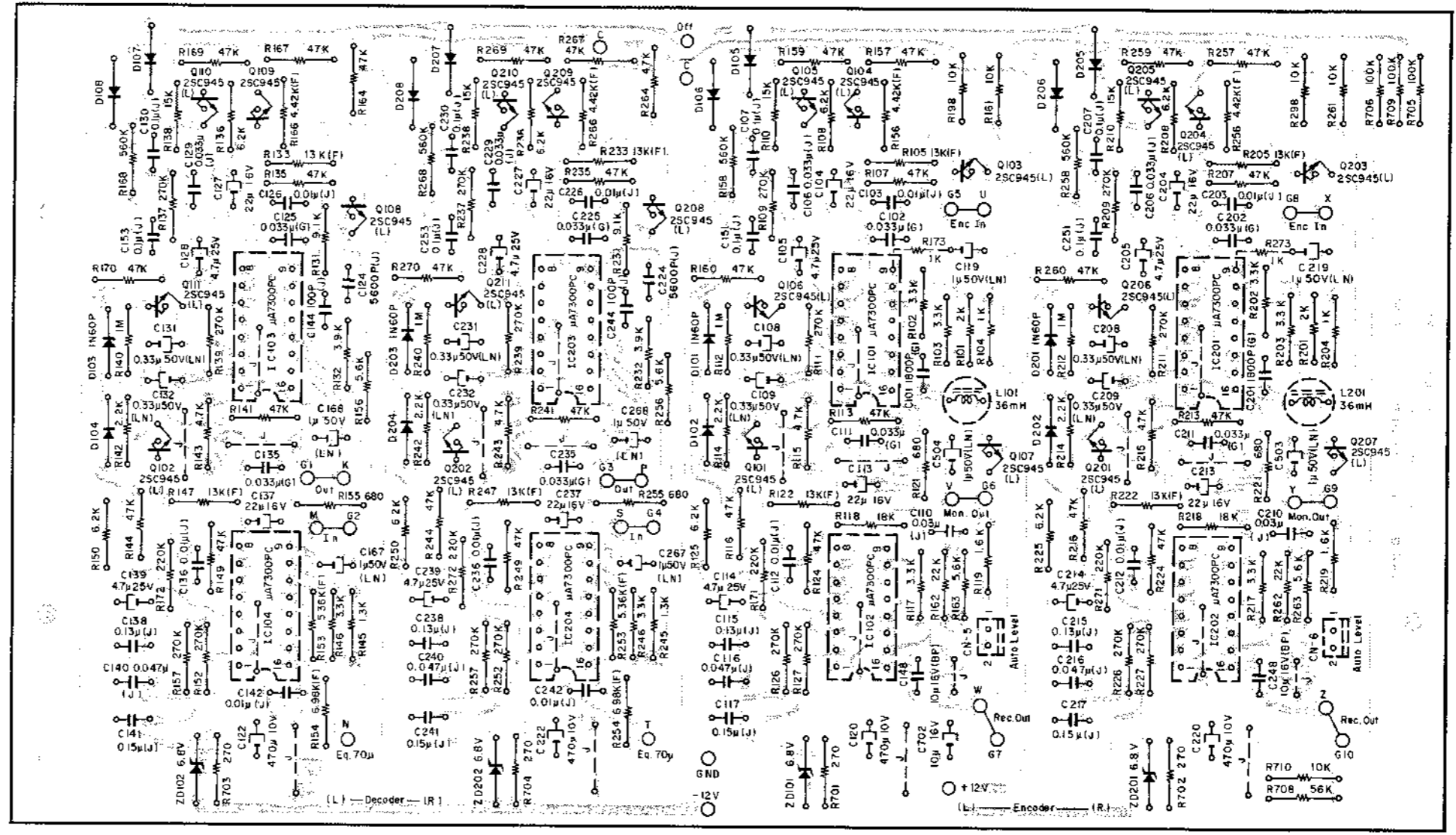


Fig. 7.14.2 Serial Nos.: A12201001 - A12202861

Note: Diode is 1SS53 unless otherwise specified.

7.15. Logic P.C.B. Ass'y

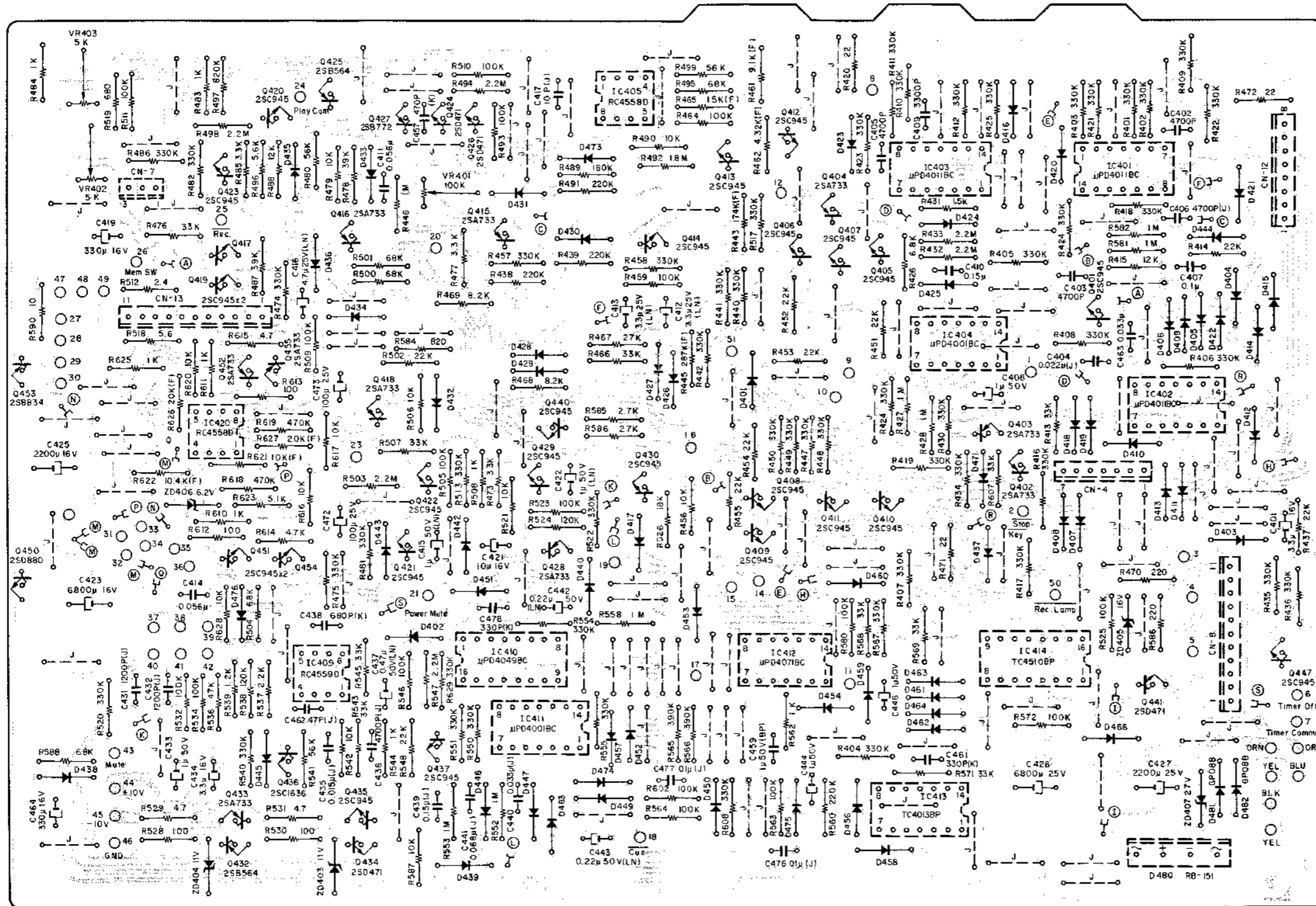


Fig. 7.15.1 Serial No.: A12204890 -

Note: Diode is 1S553 unless otherwise specified.

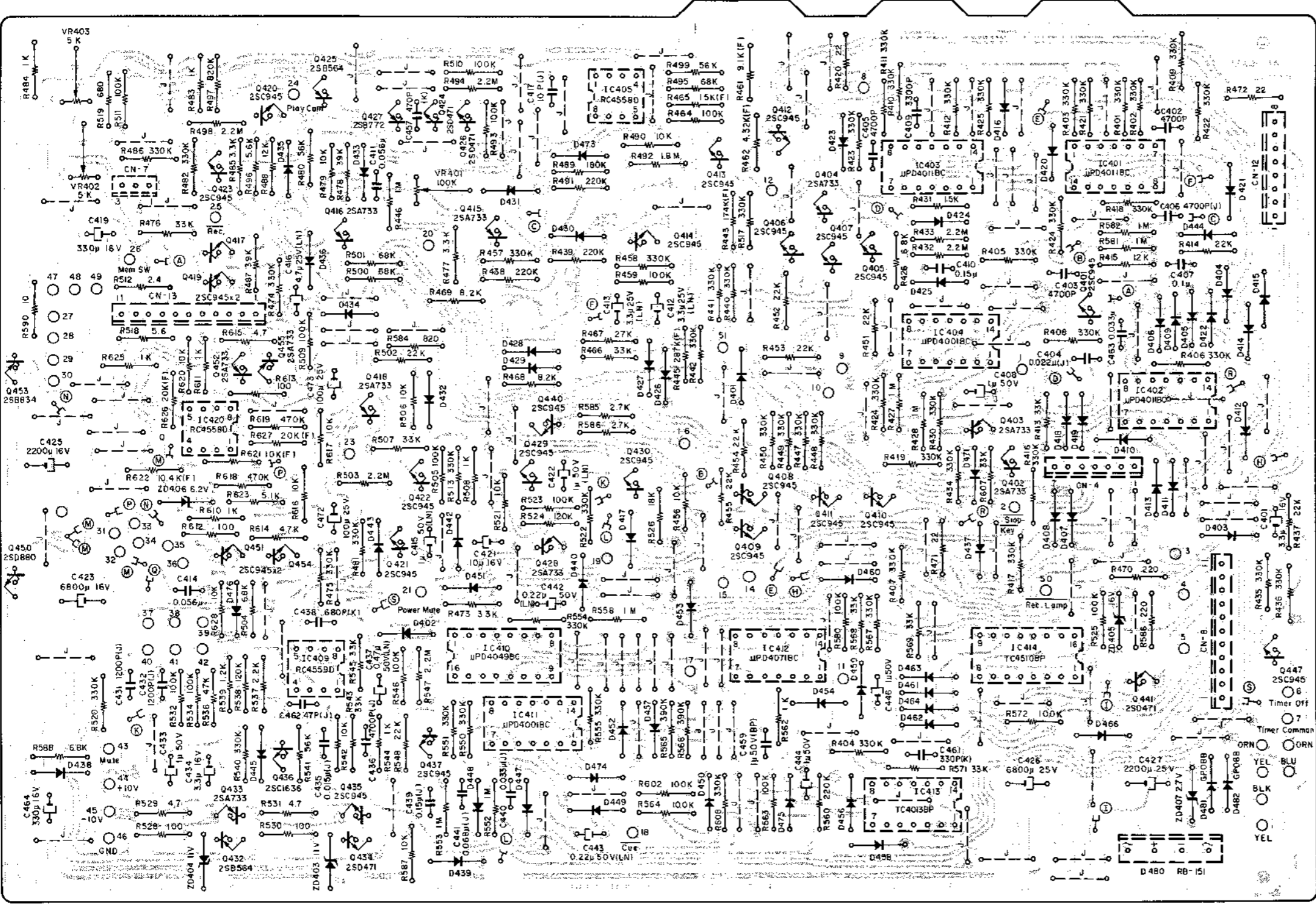


Fig. 7.15.2 Serial Nos.: A12202862 – A12204889

Note: Diode is 1SS53 unless otherwise specified.

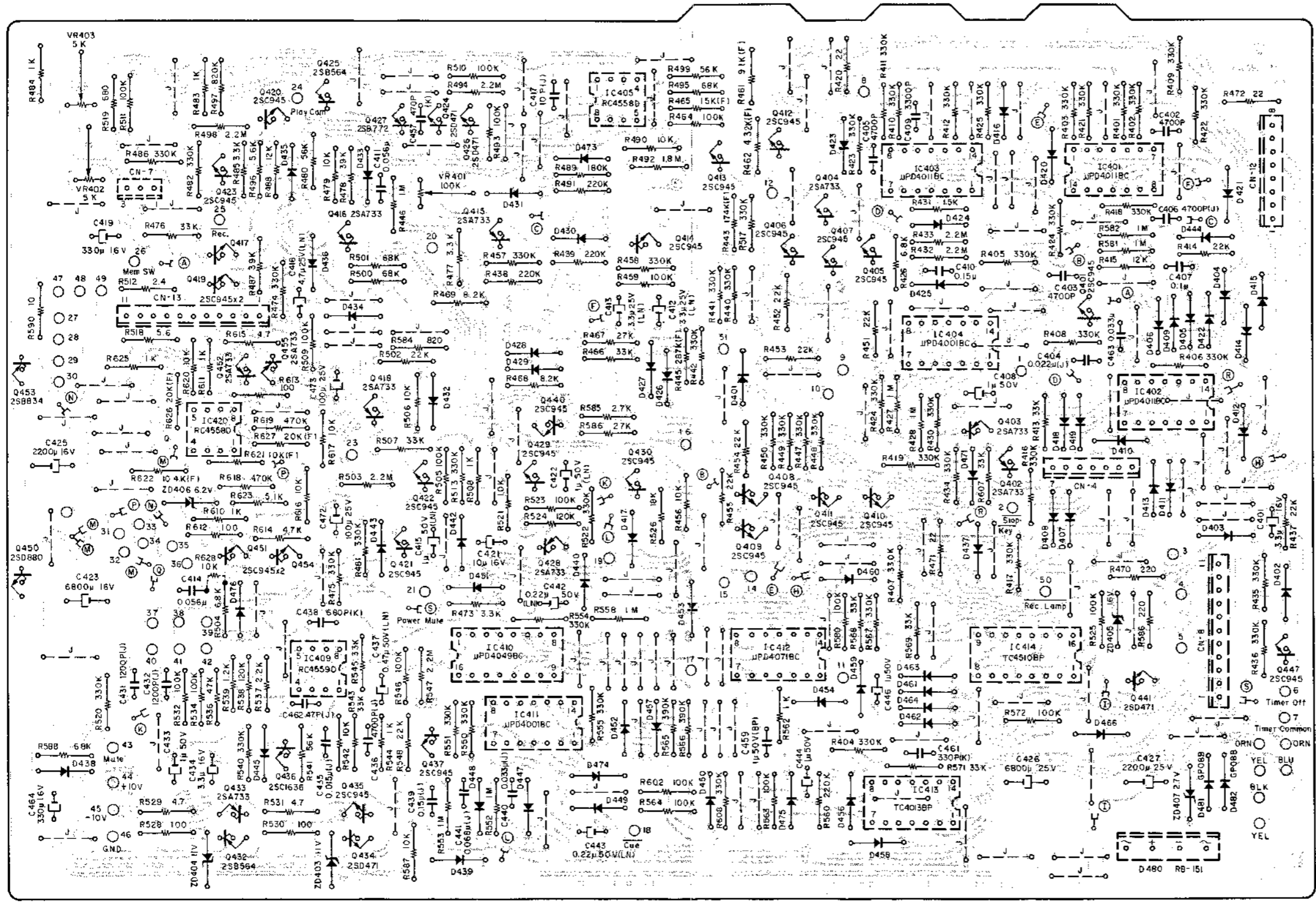


Fig. 7.15.3 Serial Nos.: A12201001 — A12202861

Note: Diode is 1SS53 unless otherwise specified.

7.16. Auto Level P.C.B. Ass'y

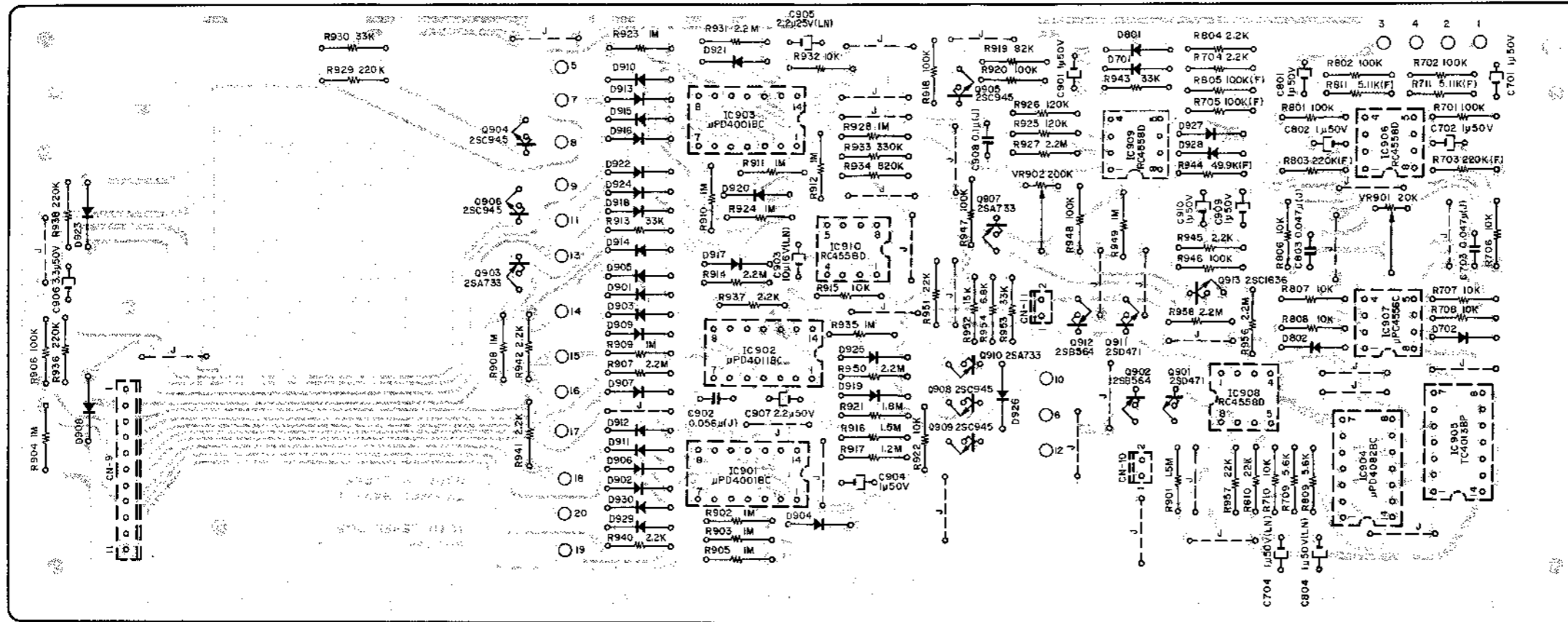


Fig. 7.16

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
	BA04492A	Auto Level P.C.B. Ass'y	920,946			R907,914	0B05671A	Carbon Resistor 2.2M ERD-25T J	C906	0B01863A	Electrolytic Capacitor 3.3μ 50V
	0B07984A	Auto Level P.C.B.	947,948			927,931			C907	0B09372A	Electrolytic Capacitor 2.2μ 50V
IC901,903	0B06302A	IC μPD4001BC	R703,803	0B09472A	Metal Film Resistor 220K SN14K2E F	950,956			C908	0B01780A	Mylar Capacitor 0.1μ 50V J
IC902	0B06178A	IC μPD4011BC	R704,804	0B05622A	Carbon Resistor 2.2K ERD-25T J	958			CN9	0B08655A	11P-T Post
IC904	0B06307A	IC μPD4082BC	941,942			R913,930	0B05509A	Carbon Resistor 33K ERD-25T J	CN10,11	0B08656A	2P-T Post
IC905	0B06213A	IC TC4013BP	945			943,953			0E00857A	0B08657A	BT Screw M3x6 Philips Binding Head
IC906,908	0B06124B	IC RC4558D	R705,805	0B09305A	Metal Film Resistor 100K SN14K2E F	R917	0B05962A	Carbon Resistor 1.2M ERD-25T J			
909,910			R706,707	0B01888A	Carbon Resistor 10K ERD-25T J	R919	0B05668A	Carbon Resistor 82K ERD-25T J			
IC907	0B06216A	IC μPC4556C	708,710			R921	0B05680A	Carbon Resistor 1.8M ERD-25T J			
Q901,911	0B06066A	Transistor 2SD471	806,807			R925,926	0B05621A	Carbon Resistor 120K ERD-25T J			
Q902,912	0B06069A	Transistor 2SB564	808,915			R929,936	0B05625A	Carbon Resistor 220K ERD-25T J			
Q903,907	0B06013A	Transistor 2SA733	922,932			938					
910			R709,809	0B01887A	Carbon Resistor 5.6K ERD-25T J	R933	0B05627A	Carbon Resistor 330K ERD-25T J			
Q904,905	0B06100A	Transistor 2SC945 (A)	R711,811	0B09425A	Metal Film Resistor 5.11K SN14K2E F	R934	0B09320A	Carbon Resistor 820K ERD-25T J			
906,908			R810,951	0B05615A	Carbon Resistor 22K ERD-25T J	R944	0B09452A	Metal Film Resistor 49.9K SN14K2E F			
909			957			R952	0B01683A	Carbon Resistor 15K ERD-25T J			
Q913	0B06070A	Transistor 2SC1636	R901,916	0B09380A	Carbon Resistor 1.5M ERD-25T J	R954	0B01682A	Carbon Resistor 6.8K ERD-25T J			
D701,702	0B06181A	Silicon Diode 1SS53 (34 pcs.)	R902,903	0B05776A	Carbon Resistor 1M ERD-25T J	C701,702	0B01405A	Electrolytic Capacitor 1μ 50V			
801,802			904,905			801,802					
901-930			908,909			901,904					
VR901	0B07261A	Semi-fixed Volume 20K	910,911			909,910					
VR902	0B07154A	Semi-fixed Volume 200K	912,923			C703,803	0B05796A	Mylar Capacitor 0.047μ 50V J			
R701,702	0B01889A	Carbon Resistor 100K ERD-25T J	924,928			C704,804	0B09223A	Electrolytic Capacitor 1μ 50V (LN)			
801,802			935,949			C902	0B05813A	Mylar Capacitor 0.056μ 50V J			
906,918						C903	0B09148A	Electrolytic Capacitor 10μ 16V (LN)			
						C905	0B09332A	Electrolytic Capacitor 2.2μ 25V (LN)			

8. MECHANISM ASS'Y AND PARTS LIST

8.1. Synthesis

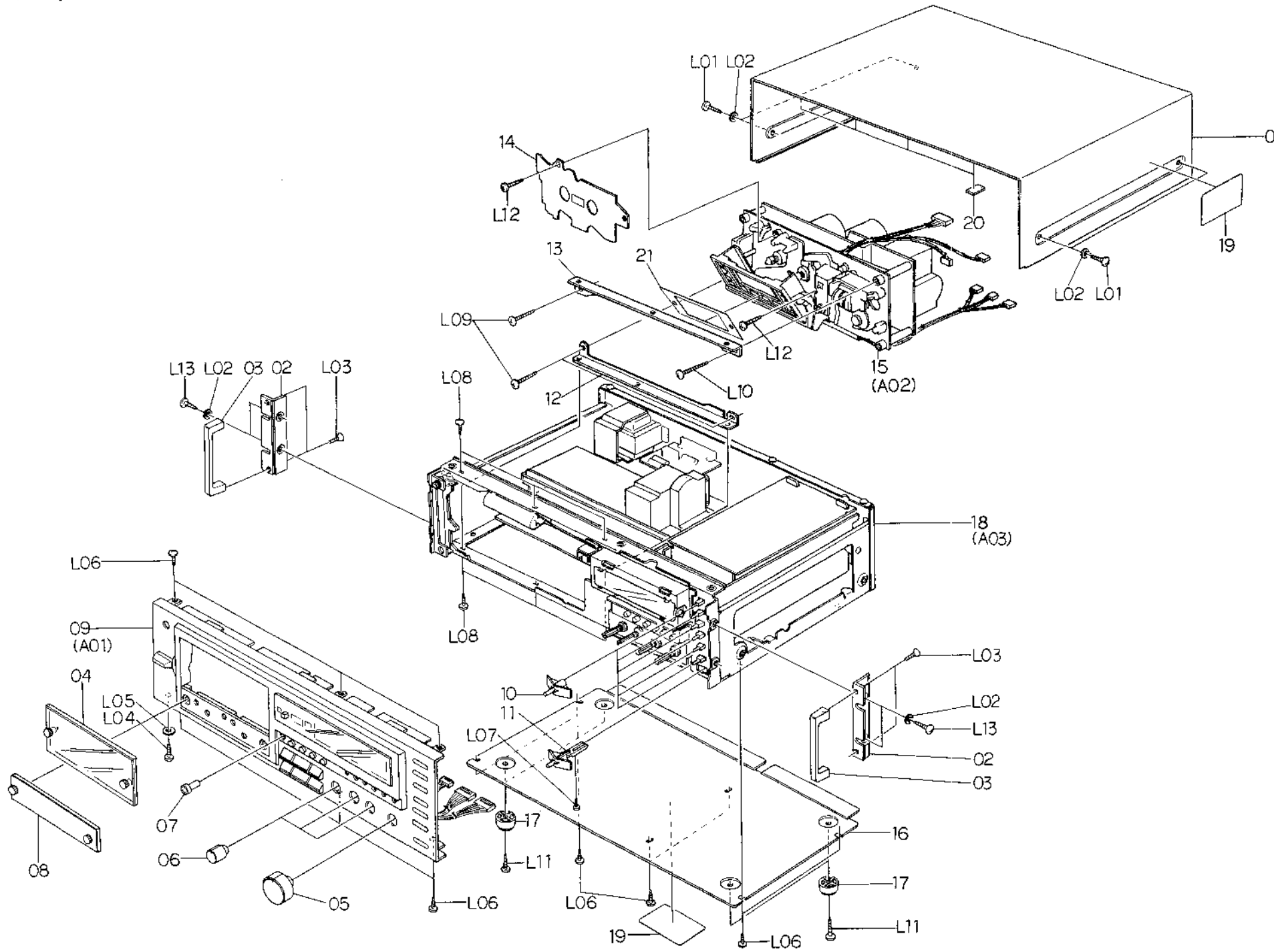


Fig. 8.1

Schematic Ref. No.	Part No.	Description	Q'ty
	HA04179A	Synthesis (U.S.A. & Canada)	1
	HA04180A	Synthesis (Japan)	1
	HA04181A	Synthesis (220V Class 2)	1
	HA04183A	Synthesis (UK)	1
	HA04182A	Synthesis (Australia)	1
	HA04184A	Synthesis (Others)	1
	Serial No.: A12201001 -		
01	0H03723D	Top Cover	1
02	0H03788B	Side Panel B	2
03	0H03763A	Handle B	2
04	HA03882A	Cassette Case Cover Ass'y	1
05	0H03732B	Volume Knob A	1
(05)	0H03733A	Volume Knob Sleeve A	1
06	0H03738B	Volume Knob B	3
(06)	0H03739A	Volume Knob Sleeve B	3
07	0H03725A	Pitch Control Knob	1
08	HA04202A	Azimuth Alignment Cover Ass'y	1
09	HA04201A	Front Panel Ass'y	1
10	HA03838B	Function Switch Knob Ass'y	6
11	0H03741A	Power Switch Knob	1
12	OJ04158A	Mechanism Holder B	1
13	OJ04157A	Mechanism Holder A	1
14	CA08259A	Cover Plate Ass'y	1
15	CA08303A	Mechanism Ass'y 682ZX	1
16	0H03757A	Bottom Cover	1
17	OJ03825A	Leg S	4
18	JA03864A	Chassis Ass'y (U.S.A. & Canada)	1
	JA03865A	Chassis Ass'y (Japan)	1
	JA03866A	Chassis Ass'y (220V Class 2)	1
	JA03868A	Chassis Ass'y (UK)	1
	JA03867A	Chassis Ass'y (Australia)	1
	JA03869A	Chassis Ass'y (Others)	1
19	OM04101B	Caution Label	2
20	OJ04080A	Top Cover Himelon	4
21	0H03758A	Cassette Case Plate	1
L01	0E00915A	BT Screw M4x8 Philips Binding Head (Black Chromate)	4
L02	0E00736A	Washer 4mm (Black Chromate)	8
L03	0E00908A	Screw M4x6 Philips Countersunk	4
L04	0E00921A	BT Screw M3x8 Philips Binding Head (Black Chromate)	1
L05	0E00677A	Washer 3mm (Black Plastics)	1
L06	0E00857A	BT Screw M3x6 Philips Binding Head	6
L07	0E00814A	BT Screw M2x4 Philips Pan Head	1
L08	0E00920A	Screw M3x6 Philips Polywave	6
L09	0E00867A	BT Screw M4x15 Philips Binding Head	3
L10	0E00878A	BT Screw M4x20 Philips Binding Head	1
L11	0E00852A	BT Screw M4x12 Philips Binding Head	4
L12	0E00959A	BT Screw M4x10 Philips Binding Head (Black Chromate)	4

8.2. Front Panel Ass'y (A01)

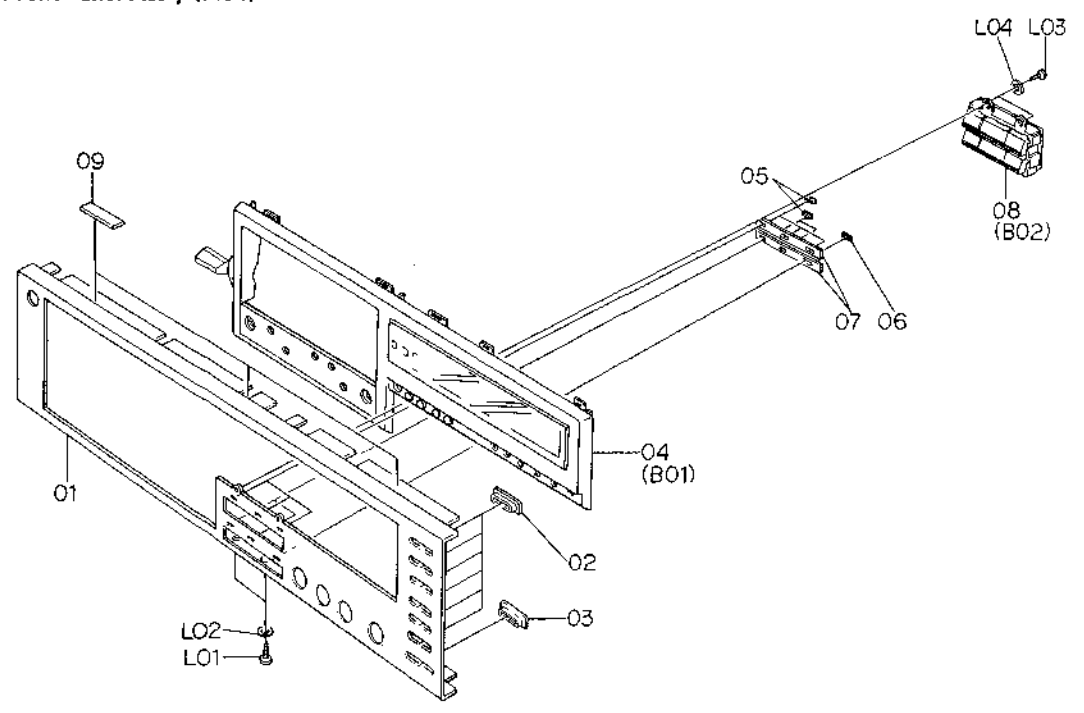


Fig. 8.2

Schematic Ref. No.	Part No.	Description	Q'ty
A01	HA04201A	Front Panel Ass'y Serial No.: A12201001 -	1
01	0H03978A	Front Panel	1
02	0H03746A	Function Switch Escutcheon	6
03	0H03747C	Power Switch Escutcheon	1
04	HA04186A	Front Panel Escutcheon Ass'y	1
05	0H03744B	Green Lens	5
06	0H03986A	Red Lens	1
07	0J04059B	Light Intercepting Seal	2
08	HA04187A	Control Button Ass'y	1
09	0H03781A	Cushion	3
L01	0E00825A	BT Screw M2.6x8 Philips Binding Head	2
L02	0E00912A	Washer FT25	2
L03	0E00794A	BT Screw M2x5 Philips Pan Head	2
L04	0E00117A	Washer 2mm	2

8.3. Mechanism Ass'y 682ZX (A02)

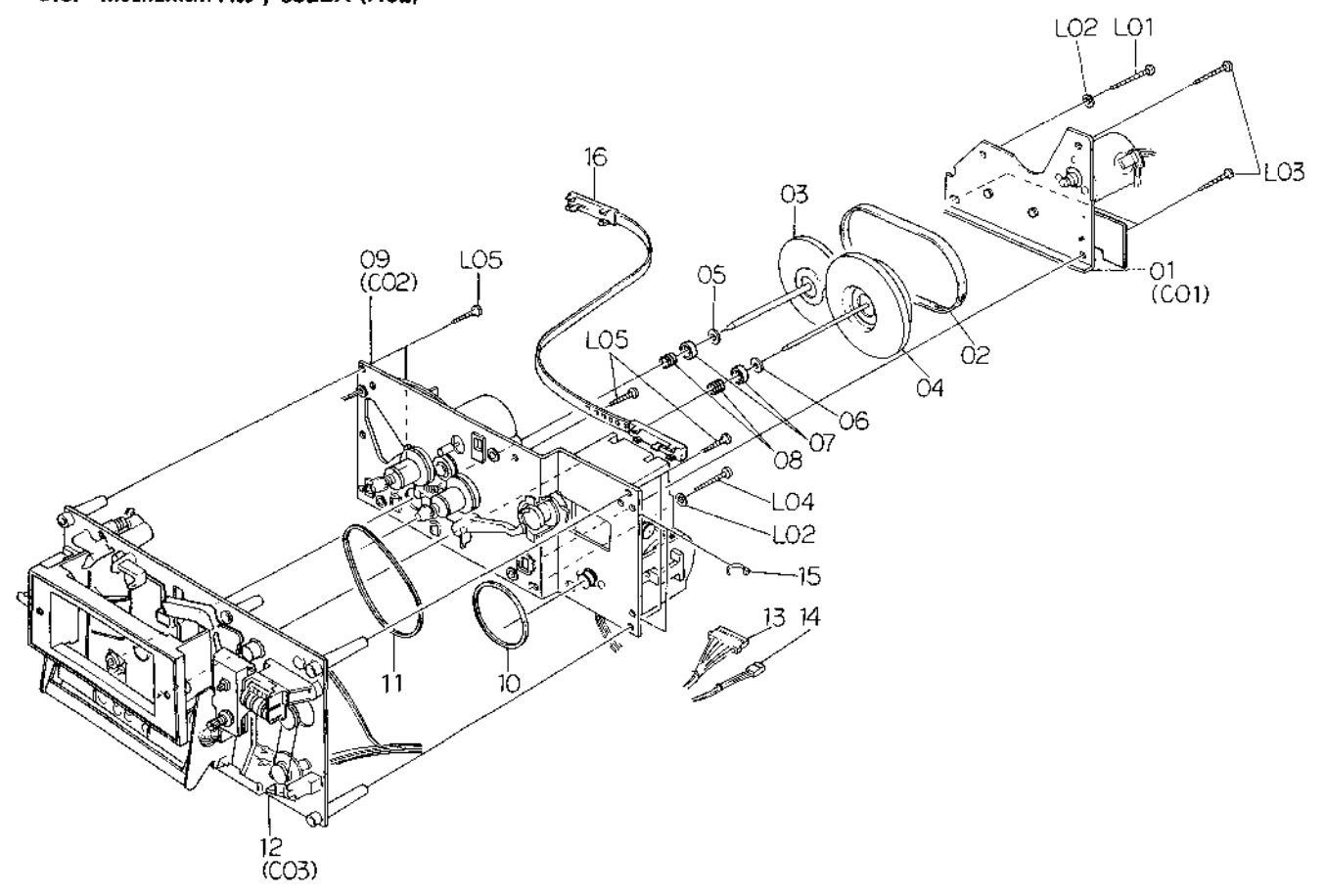


Fig. 8.3

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
A02	CA08303A	Mechanism Ass'y 682ZX Serial No.: A12201001 -	1	L01	0E00834A	BT Screw M3x30 Philips Pan Head	1
				L02	0E00178A	Washer 3mm	2
				L03	0E00833A	BT Screw M3x20 Philips Pan Head	3
				L04	0E00835A	BT Screw M3x25 Philips Pan Head	1
				L05	0E00883A	BT Screw M3x18 Philips Pan Head	5
01	CA08247A	Flywheel Holder Ass'y	1				
02	0C08096C	Capstan Belt	1				
03	CA08173A	Supply Flywheel Ass'y D	1				
04	CA08015A	Take-up Flywheel Ass'y	1				
05	0C08021B	Thrust Washer 3.1mm	1				
06	0C08020B	Thrust Washer 2.6mm	1				
07	0C08243A	Flange Thrust Cap	2				
08	0C08244A	Flange Thrust Spring	2				
09	CA08304A	Sub Mechanism Chassis Ass'y	1				
10	0C08099B	Control Motor Belt	1				
11	0C08098B	Counter Belt B	1				
12	CA08363A	Main Mechanism Chassis Ass'y	1				
13	0B08895A	11P-H Connector	1				
14	0B08652C	3P-H Connector	1				
15	0B08515A	Insh-Lock	15				
16	0C08237A	Azimuth Alignment Wire	1				
-	0M04286A	Mechanism Serial No. Seal	1				

8.4. Chassis Ass'y (A03)

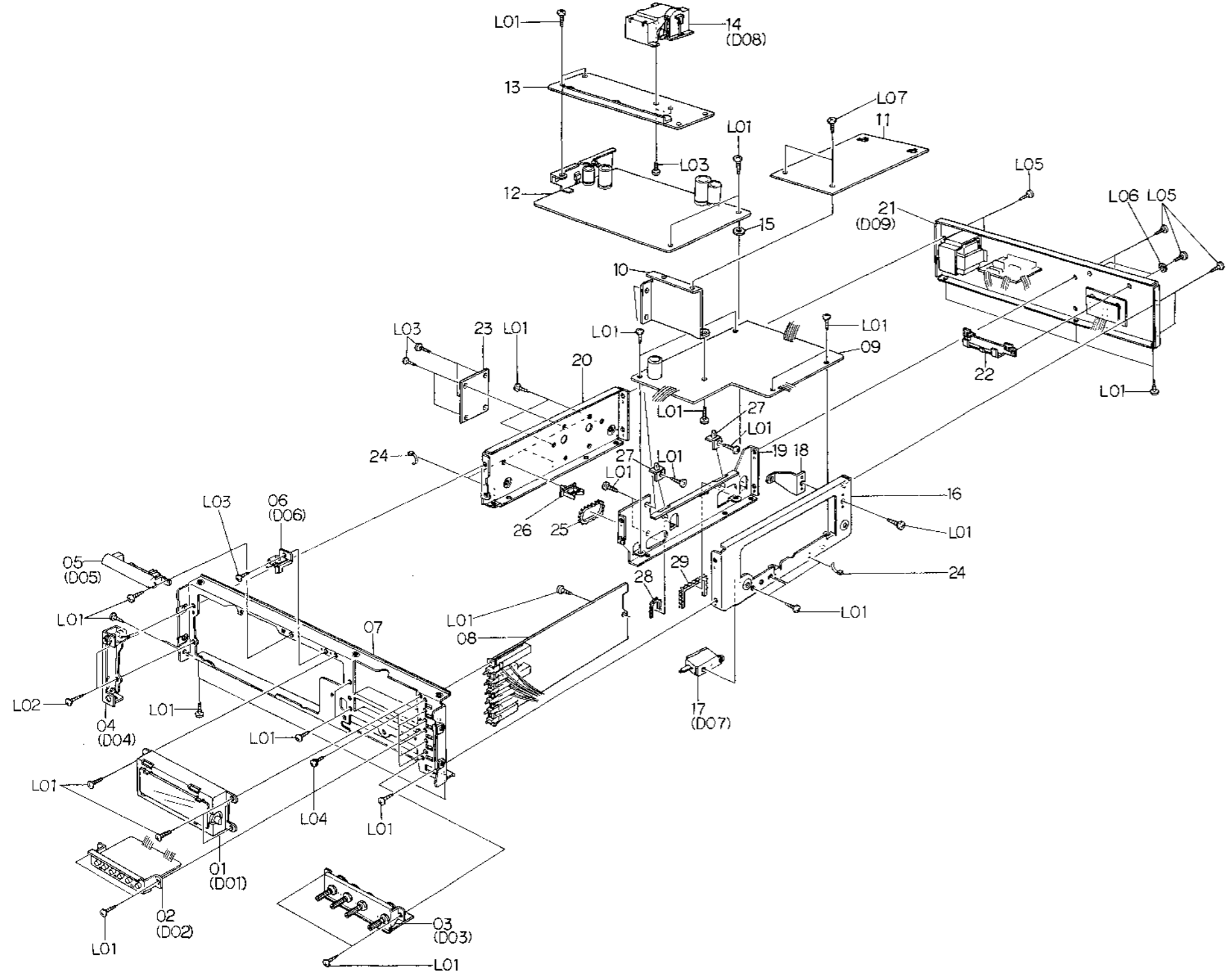


Fig. 8.4

Schematic Ref. No.	Part No.	Description	Q'ty
A03	JA03864A	Chassis Ass'y (U.S.A. & Canada)	1
	JA03865A	Chassis Ass'y (Japan)	1
	JA03866A	Chassis Ass'y (220V Class 2)	1
	JA03868A	Chassis Ass'y (UK)	1
	JA03867A	Chassis Ass'y (Australia)	1
	JA03869A	Chassis Ass'y (Others)	1
		Serial No.:	A12201001 -
01	JA03857A	FL Indicator Ass'y	1
02	JA03872A	Bias Calibration Ass'y	1
03	JA03871A	Volume Holder Ass'y	1
04	JA03659A	Headphone Jack Ass'y	1
05	JA03600A	Reflector Ass'y	1
06	JA03602A	Counter Lamp Ass'y	1
07	OJ04034G	Front Chassis	1
08	BA04461A	Switch P.C.B. Ass'y	1
09	BA04463A	Main P.C.B. Ass'y	1
10	OJ04409A	Dolby NR P.C.B. Holder A	1
11	BA04494A	Dolby NR P.C.B. Ass'y	1
12	BA04465A	Logic P.C.B. Ass'y	1
13	BA04492A	Auto Level P.C.B. Ass'y	1
14	JA03870A	Auto Level Motor Ass'y	1
15	OJ04340A	P.C.B. Stopper Fiber	1
16	OJ04033C	Side Chassis R	1
17	JA03592A	Power Switch Holder Ass'y (U.S.A. & Canada)	1
	JA03595A	Power Switch Holder Ass'y (Japan)	1
	JA03594A	Power Switch Holder Ass'y (220V Class 2, UK, Australia & Others)	1
18	OJ04055B	Switch P.C.B. Holder	1
19	OJ04407B	Center Chassis E	1
20	OJ04031C	Side Chassis L	1
21	HA04194A	Rear Panel Ass'y (U.S.A. & Canada)	1
	HA04195A	Rear Panel Ass'y (Japan)	1
	HA04199A	Rear Panel Ass'y (220V Class 2)	1
	HA04197A	Rear Panel Ass'y (UK)	1
	HA04198A	Rear Panel Ass'y (Australia)	1
	HA04196A	Rear Panel Ass'y (Others)	1
22	OJ04448A	Dolby NR P.C.B. Holder B	1
23	OJ04421A	Insulator E	2
24	0B08515A	Insu-Lock	23
25	OJ04064A	Free Bushing 85mm	1
26	0B08580A	Wire Holder 161	1
27	0B08771A	Hinge	2
28	OJ04436A	Free Bushing 52mm	1
29	OJ04449A	Free Bushing 105mm	1
L01	0E00857A	BT Screw M3x6 Philips Binding Head	37
L02	0E00868A	BT Screw M3x8 Philips Binding Head	2
L03	0E00859A	BT Screw M2.6x6 Philips Binding Head	7
L04	0E00622A	Screw M3x5 Philips Pan Head (2A)	6
L05	0E00860A	BT Screw M3x6 Philips Binding Head (Black Chromate)	8
L06	0E00677A	Washer 3mm (Black Plastics)	2
L07	0E00920A	Screw M3x6 Philips Polywave	2

8.5. Front Panel Escutcheon Ass'y (B01)

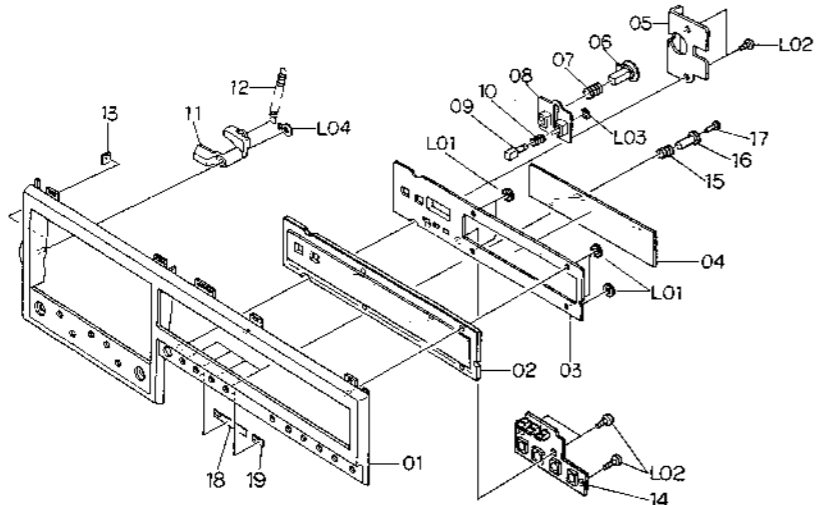


Fig. 8.5

8.6. Control Button Ass'y (B02)

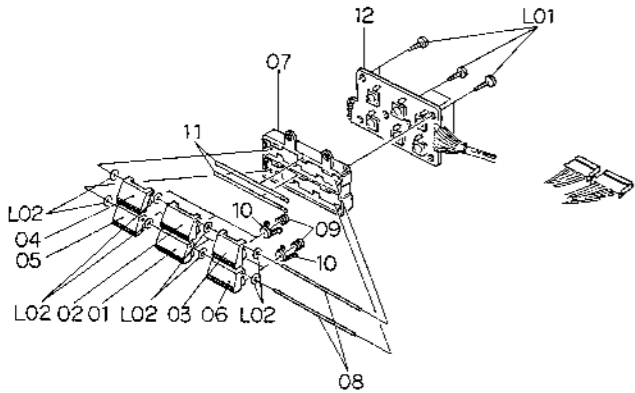


Fig. 8.6

8.7. Flywheel Holder Ass'y (C01)

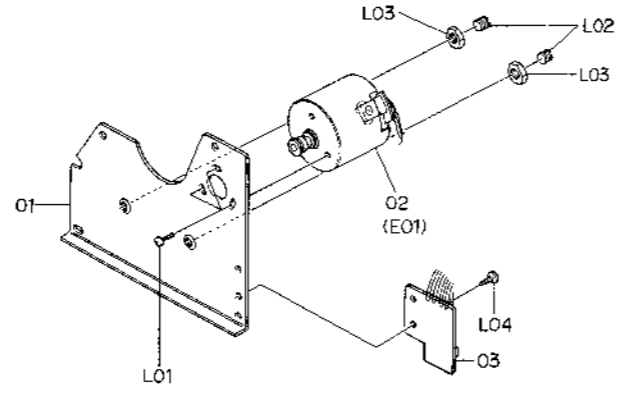


Fig. 8.7

8.8. Sub Mechanism Chassis Ass'y (C02)

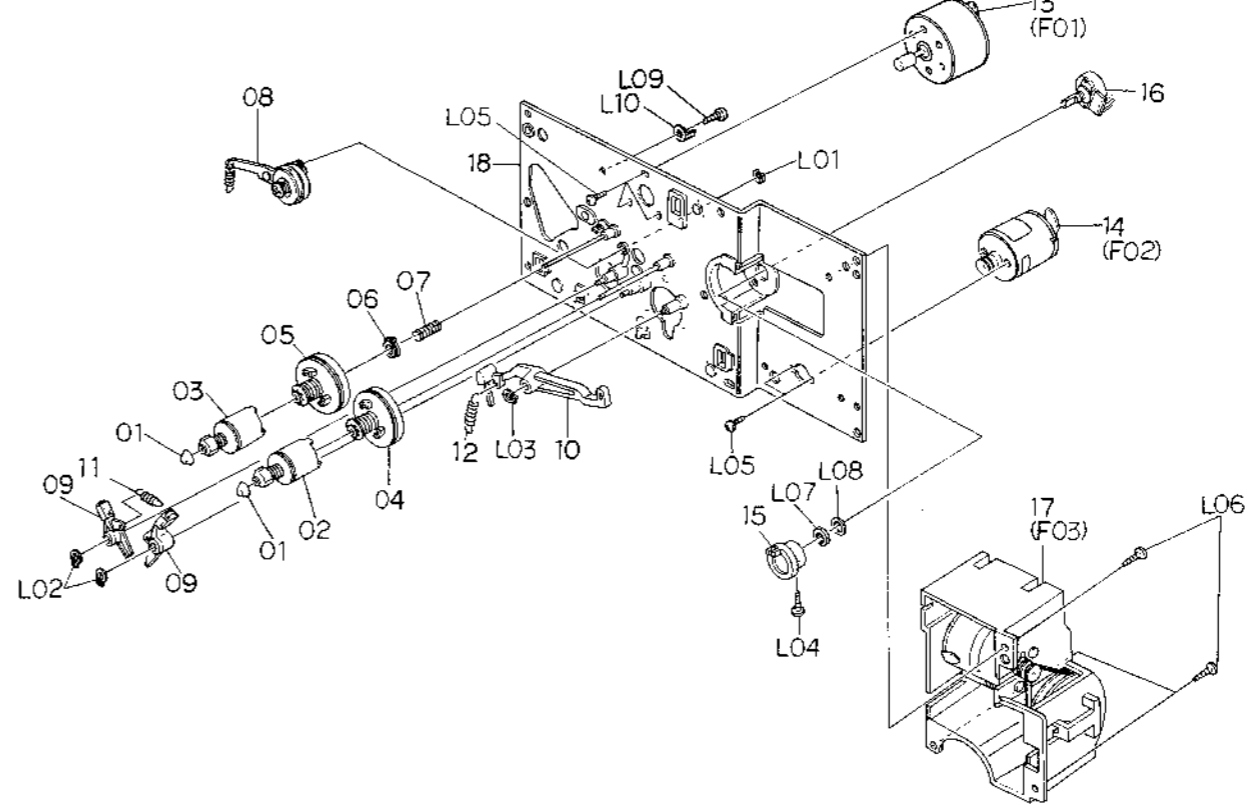


Fig. 8.8

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
B01	HA04186A	Front Panel Escutcheon Ass'y Serial No.: A12201001 -	1	19	OJ04414A	Damp Sheet B	1
01	HA04171A	Front Panel Escutcheon Sub Ass'y	1	L01	0E00874A	Stopper Ring 2mm	5
02	0H03722B	Display Glass	1	L02	0E00792A	BT Screw M2.6x6 Philips Pan Head (Chromate)	5
03	0H03980A	Counter Escutcheon	1	L03	0E00890A	C-Ring 2mm	1
04	0H03748A	FL Indicator Filter	1	L04	0E00837A	Stopper Ring 3mm	1
05	OJ04050A	Counter Escutcheon Holder	1	B02	HA04187A	Control Button Ass'y Serial No.: A12201001 -	1
06	0H03749A	Memory Switch Knob	1	01	0H03726B	Control Button Stop	1
07	OJ04043A	Memory Switch Knob Spring	1	02	0H03727B	Control Button Play	1
08	0H03743B	CM Escutcheon	1	03	0H03728B	Control Button F.F.	1
09	0H03750A	Counter Reset Knob	1	04	0H03729B	Control Button Rewind	1
10	OJ04042A	Counter Reset Knob Spring	1	05	0H03730B	Control Button Pause	1
11	0H03724F	Eject Lever	1	06	0H03987A	Control Button Record	1
12	0H03762A	Eject Lever Spring	1	07	OJ04044C	Control Button Holder	1
13	OJ04057B	Eject Lever Cushion	1	08	OJ04045B	Control Button Shaft	2
14	BA04466A	Calibration Indicator P.C.B. Ass'y	1	09	OJ04046A	Control Button Spring	6
15	OJ04412B	Calibration Knob Spring	4	10	OJ04052B	Spring Stopper	6
16	0H03984B	Calibration Knob	4	11	OJ04099A	Control Button Himelon	2
17	OJ04435A	Calibration Knob A	4				
18	OJ04413A	Damp Sheet A	1				

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
12	BA04071A	Control Switch P.C.B. Ass'y	1	08	CA08193A	Idler Ass'y	1
L01	0E00792A	BT Screw M2.6x6 Philips Pan Head	6	09	CA08042A	Brake Ass'y	2
L02	OJ04061A	Washer FT20	8	10	0C08030C	Brake Drive Arm	1
C01	CA08247A	Flywheel Holder Ass'y Serial No.: A12201001 -	1	11	0C08129A	Brake Arm Spring	1
01	0C080131	Flywheel Holder	1	12	0C08128A	Brake Drive Arm Spring	1
02	CA08246A	Capstan Motor Ass'y	1	13	CA08242A	Reel Motor Ass'y	1
03	BA04238A	Speed Cal. P.C.B. Ass'y	1	14	CA08034A	Control Motor Ass'y	1
L01	0E00226A	Screw M2.6x4 Philips Pan Head	3	15	0C08053B	Volume Coupler	1
L02	0C08068C	Thrust Screw	2	16	0B07240A	Volume Control 10K (B)	1
L03	0C03857A	Lock Nut	2	17	CA08148A	Azimuth Alignment Motor Ass'y	1
L04	0E00843A	BT Screw M3x5 Philips Pan Head	1	18	CA08194A	Sub Chassis Ass'y	1
C02	CA08304A	Sub Mechanism Chassis Ass'y Serial No.: A12201001 -	1	L01	0E00698A	E-Ring 2.5mm	1
01	0C08039B	Reel Hub Head	2	L02	0E00837A	Stopper Ring 3mm	2
02	CA08038B	Reel Hub B Take-up Ass'y	1	L03	0E00838A	Stopper Ring 4mm	1
03	CA08197A	Reel Hub B Supply Ass'y	1	L04	0E00859A	BT Screw M2.6x6 Philips Binding Head	1
04	CA08037A	Reel Hub Take-up Ass'y	1	L05	0E00226A	Screw M2.6x4 Philips Pan Head	5
05	CA08064A	Reel Hub Supply Ass'y	1	L06	0E00846A	BT Screw M3x8 Philips Pan Head	3
06	CA08039A	Back Tension Ass'y	1	L07	-	Volume Nut	(1)
07	0C08269A	Back Tension Spring C	1	L08	-	Volume Washer	(1)
				L09	0E00843A	BT Screw M3x5 Philips Pan Head	1
				L10	0E00037A	Earth Lug B-5	1

8.9. Main Mechanism Chassis Ass'y (C03)

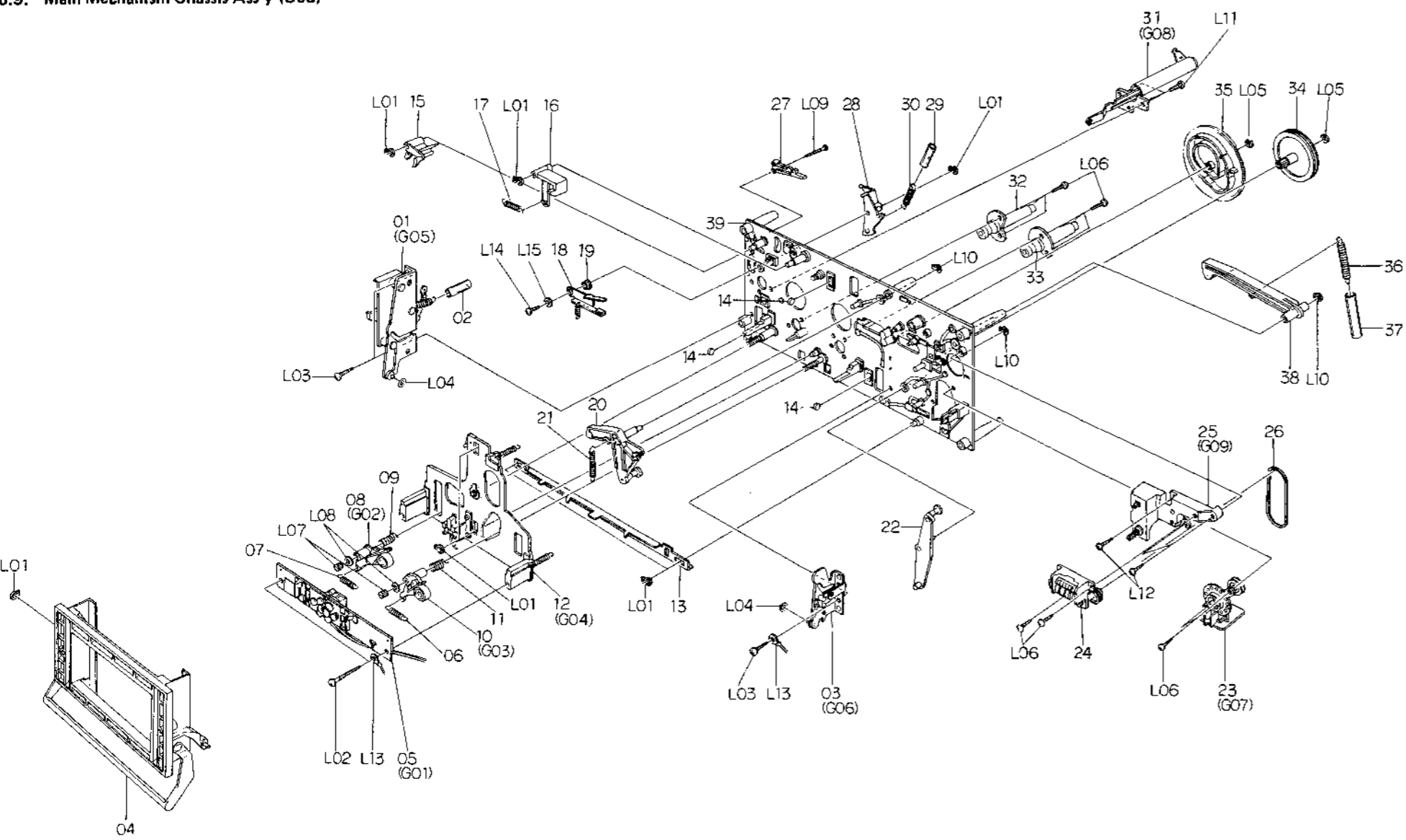


Fig. 8.9

Schematic Ref. No.	Part No.	Description	Q'ty
C03	CA08363A	Main Mechanism Chassis Ass'y Serial No.: A12201001 -	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	CA08163A	Cassette Case Ass'y	1
05	CA08319A	Head Mount Base Ass'y	1
06	0C08121A	Supply Pressure Roller Spring	1
07	0C08250A	Supply Pressure Roller Spring B	1
08	CA08053B	Supply Pressure Roller Ass'y	1
09	0C08122B	Supply Pressure Roller Thrust Spring	1
10	CA08079B	Take-up Pressure Roller Ass'y	1
11	0C08183B	Take-up Pressure Roller Thrust Spring	1
12	CA08322A	Head Base Ass'y	1
13	0C08182A	Pressure Roller Drive Bar B	1
14	0C08086B	Head Base Roller	3
15	0C08050B	Record Sensor	1
16	0C08061E	Cassette Hold Arm	1
17	0C08120A	Cassette Hold Arm Spring	1
18	CA08196A	Back Tension Ass'y	1
19	0C08254A	Back Tension Arm Collar	1
20	CA08027A	Head Base Drive Arm Ass'y	1
21	0C08143C	Head Base Drive Arm Spring	1
22	CA08026A	Pressure Roller Drive Arm Ass'y	1
23	CA08099A	Auto Shut-off Ass'y	1
24	CA08098A	Counter Ass'y	1
25	CA08105A	Pitch Control Holder Ass'y	1
26	0C08224A	Counter Belt	1
27	0C08119A	Record Protector	1
28	0C08194C	Damper Lock Arm	1
29	0C08153A	Damper Lock Arm Spring Tube	1
30	0C08116A	Record Arm Spring	1
31	CA08030A	Pneumatic Damper Ass'y	1
32	CA08023A	Supply Capstan Flange Ass'y	1
33	CA08024A	Take-up Capstan Flange Ass'y	1
34	0C08186A	Cam Drive Gear	1
35	0C08029H	Control Cam	1
36	0C08152A	Counter-Load Arm Spring	1
37	0C08117A	Counter-Load Arm Spring Tube	1
38	CA08028A	Counter-Load Arm Ass'y	1
39	CA08183A	Main Chassis Ass'y	1
L01	0E00837A	Stopper Ring 3mm	9
L02	0E00834A	BT Screw M3x30 Philips Pan Head	2
L03	0E00831A	BT Screw M3x10 Philips Pan Head	3
L04	0E00254A	Washer 3.1mm (Plastics)	2
L05	0E00222A	E-Ring 2mm	2
L06	0E00876A	BT Screw M2.6x8 Philips Pan Head	11
L07	0C08060B	Height Adjustment Nut	2
L08	0E00142A	Washer 2.6mm	2
L09	0E00879A	BT Screw M2x15 Philips Pan Head	1
L10	0E00838A	Stopper Ring 4mm	3
L11	0E00846A	BT Screw M3x8 Philips Pan Head	3
L12	0E00828A	BT Screw M2.6x8 Philips Binding Head (Chromate)	3
L13	0E00895A	Earth Lug 3mm	2
L14	0E00859A	BT Screw M2.6x6 Philips Binding Head	1
L15	0C08255A	Washer 2.6mm	1

8.10. FL Indicator Ass'y (D01)

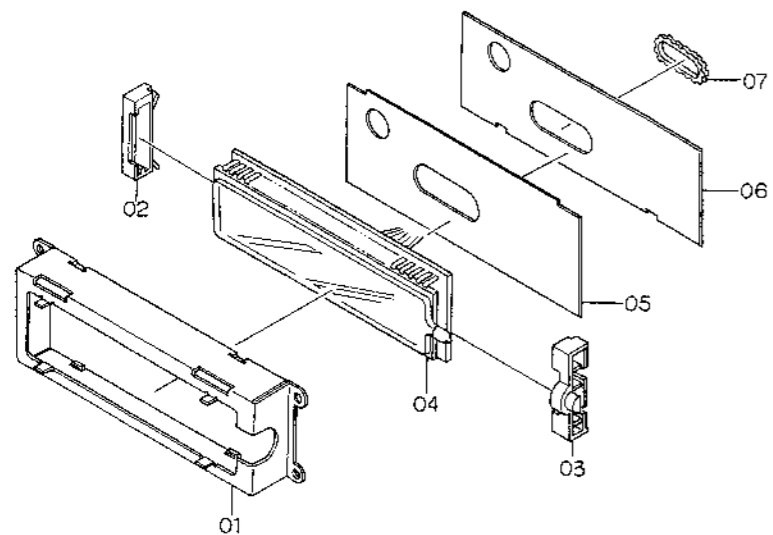


Fig. 8.10

8.11. Bias Calibration Ass'y (D02)

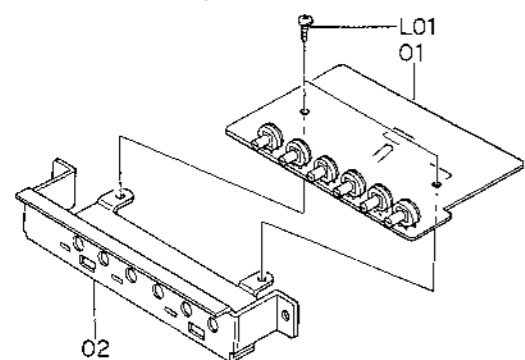


Fig. 8.11

8.12. Volume Holder Ass'y (D03)

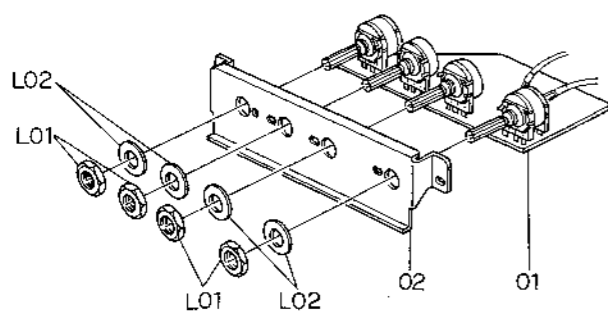


Fig. 8.12

8.13. Headphone Jack Ass'y (D04)

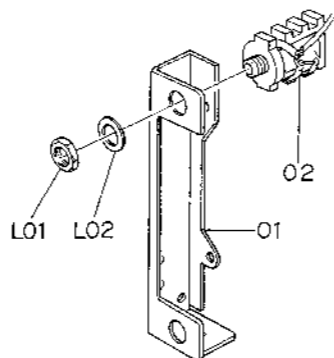


Fig. 8.13

8.14. Reflector Ass'y (D05)

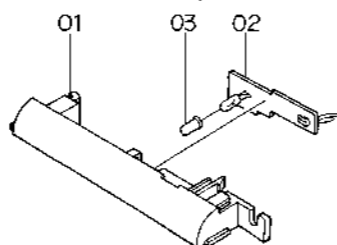


Fig. 8.14

8.15. Counter Lamp Ass'y (D06)

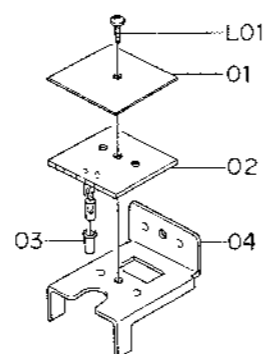


Fig. 8.15

8.16. Power Switch Holder Ass'y (D07)

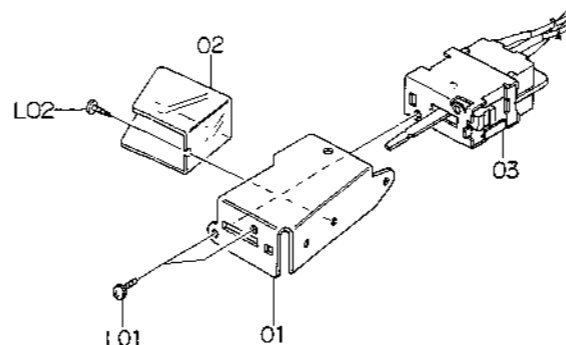


Fig. 8.16

8.17. Auto Level Motor Ass'y (D08)

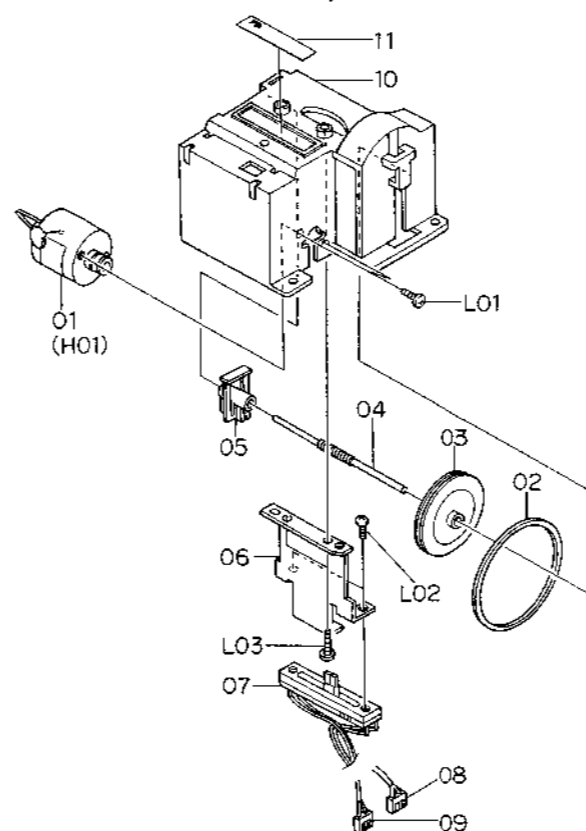


Fig. 8.17

Schematic Ref. No.	Part No.	Description	Q'ty
D01	JA03857A	FL Indicator Ass'y Serial No.: A12201001 --	1
01	OJ04400A	Shield Cover	1
02	OJ04402A	FL Indicator Holder L	1
03	OJ04401A	FL Indicator Holder R	1
04	BA04459A	FL Indicator P.C.B. Ass'y	1
05	OJ04404B	Indicator P.C.B. Plate	1
06	OJ04403A	FL Indicator Hold Plate	3
07	OJ04415A	Free Bushing 70mm	1
D02	JA03872A	Bias Calibration Ass'y Serial No.: A12201001 --	1
01	BA04468A	Bias Cal. P.C.B. Ass'y	1
02	OJ04102B	Cal. P.C.B. Holder	1
L01	0E00856A	BT Screw M3x5 Philips Binding Head	2
D03	JA03871A	Volume Holder Ass'y Serial No.: A12201001 --	1
01	BA04469A	Volume P.C.B. Ass'y	1
02	OJ04100A	Volume Holder	1
L01	-	Volume Nut	(4)
L02	-	Volume Washer	(4)
D04	JA03659A	Headphone Jack Ass'y Serial No.: A12201001 --	1
01	OJ04101A	Headphone Jack Holder	1
02	0B08511A	Headphone Jack	1
L01	-	Headphone Jack Nut	(1)
L02	-	Headphone Jack Washer	(1)
D05	JA03600A	Reflector Ass'y Serial No.: A12201001 --	1
01	0H03754C	Reflector	1
02	BA04063A	Lamp P.C.B. C Ass'y	1
03	OJ04107A	Filter Cap	1
D06	JA03602A	Counter Lamp Ass'y Serial No.: A12201001 --	1
01	OJ04083A	Insulator	1
02	BA04062A	Lamp P.C.B. B Ass'y	1
03	OJ04107A	Filter Cap	1
04	OJ04041A	Counter Lamp P.C.B. Holder	1
L01	0E00859A	BT Screw M2.6x6 Philips Binding Head	1

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty		
D07	JA03592A	Power Switch Holder Ass'y (U.S.A. & Canada)	1	07	0B06672A	Power Transformer (U.S.A. & Canada)	1		
	JA03595A	Power Switch Holder Ass'y (Japan)	1		0B06619A	Power Transformer (Japan)	1		
	JA03594A	Power Switch Holder Ass'y (220V Class 2, UK, Australia & Others) Serial No.: A12201001 -	1		0B06621A	Power Transformer (220V Class 2, UK & Australia)	1		
	01	0J04038A	Power Switch Holder		1	0B06620B	Power Transformer (Others)	1	
	02	0J04056A	Power Switch Insulator		1	08	0J04442A	Transformer Shield Holder	1
	03	0B07280A	Power Switch (U.S.A. & Canada)		1	09	0J04016A	Transformer Plate	1
		0B07291A	Power Switch (Japan)		1	10	0B08037U	Cord Bushing C (U.S.A., Canada, Japan, 220V Class 2, Australia & Others)	1
		0B07292A	Power Switch (220V Class 2, UK, Australia & Others)		1	0B08351A	Cord Bushing 4K-4 (UK)	1	
	L01	0E00622A	Screw M3x5 Philips Pan Head (2A)		2	11	0B08533A	Power Cord (U.S.A., Canada & Others)	1
	L02	0E00873A	BT Screw M2.6x5 Philips Binding Head		1	0B08219B	Power Cord (Japan)	1	
	D08	JA03870A	Auto Level Motor Ass'y Serial No.: A12201001 -		1	0B08093U	Power Cord (220V Class 2)	1	
		01	CA08149A		Azimuth Motor Ass'y	1	0B08348A	Power Cord (UK)	1
		02	0C08099B		Auto Level Motor Belt	1	0B05241A	Power Cord (Australia)	1
03		0C08229B	Drive Pulley	1	12	0A03154B	Cord Spacer	1	
04		0C08230B	Drive Pulley Shaft	1	13	0J03663C	Switch Cover (U.S.A., Canada, Japan, 220V Class 2, UK & Australia)	1	
05		0J04405A	Volume Drive Jointer	1	0M03946A	Voltage Selector Lock Plate C (Others)	1		
06		0J04406A	Volume Holder	1	14	0B07092U	Voltage Selector (Others)	1	
07		0B07386B	Volume 10K	1	15	0J04079A	Cushion B	3	
08		0B08899A	2P-H Connector (White)	1	16	0M03458B	Pass Label	1	
09		0B08900A	2P-H Connector (Red)	1	17	0M04075A	Fuse Caution Label (U.S.A. & Canada)	1	
10		0C08233H	Drive Unit Base	1	18	0M04284A	Voltage Label 100V (Japan)	1	
11		0M04282A	Auto Level Unit Seal	1	0M03796A	Voltage Label 220V (220V Class 2)	1		
L01		0E00226A	Screw M2.6x4 Philips Pan Head	2	0M03797A	Voltage Label 240V (UK & Australia)	1		
L02	0E00922A	Screw M2x3 Philips Pan Head	2	0M04293A	Voltage Label 120V/220-240V (Others)	1			
L03	0E00825A	BT Screw M2.6x8 Philips Binding Head (Black Chromate)	2	-	0M03844B	Power Cord Label (UK)	1		
D09	HA04194A	Rear Panel Ass'y (U.S.A. & Canada)	1	0F01071A	Free-up Belt (220V Class 2, UK & Australia)	1			
	HA04195A	Rear Panel Ass'y (Japan)	1	0M04287A	Serial Number Plate	1			
	HA04199A	Rear Panel Ass'y (220V Class 2)	1	0B08720A	Plastic Rivet	4			
	HA04197A	Rear Panel Ass'y (UK)	1	L02	0E00594A	Screw M3x8 Philips Binding Head (Bronze)	3		
	HA04198A	Rear Panel Ass'y (Australia)	1	L03	0E00507A	Nut Hex. M3	3		
	HA04196A	Rear Panel Ass'y (Others) Serial No.: A12201001 -	1	L04	0E00581A	Washer 3mm (Spring)	1		
	01	0H03982A	Rear Panel	1	L05	0E00714A	Screw M2.6x6 Philips Binding Head (Bronze)	4	
	02	BA04485A	Pin Jack P.C.B. Ass'y	1	L06	0E00593A	Screw M3x6 Philips Binding Head (Bronze)	2	
	03	0B08355A	4P DIN Socket	1	L07	0E00756A	Screw M4x8 Philips Binding Head (Bronze)	2	
	04	0B08584A	8P DIN Socket	1	-	0J03644A	Chobert Rivet	2	
	05	BA04095A	Fuse P.C.B. Ass'y (U.S.A. & Canada)	1					
		BA04096A	Fuse P.C.B. Ass'y (Japan)	1					
		BA04105B	Fuse P.C.B. Ass'y (220V Class 2)	1					
	BA04098B	Fuse P.C.B. Ass'y (UK & Australia)	1						
	BA04097B	Fuse P.C.B. Ass'y (Others)	1						
06	0C01162B	Bolt Receptacle Plate	2						

8.18. Rear Panel Ass'y (D09)

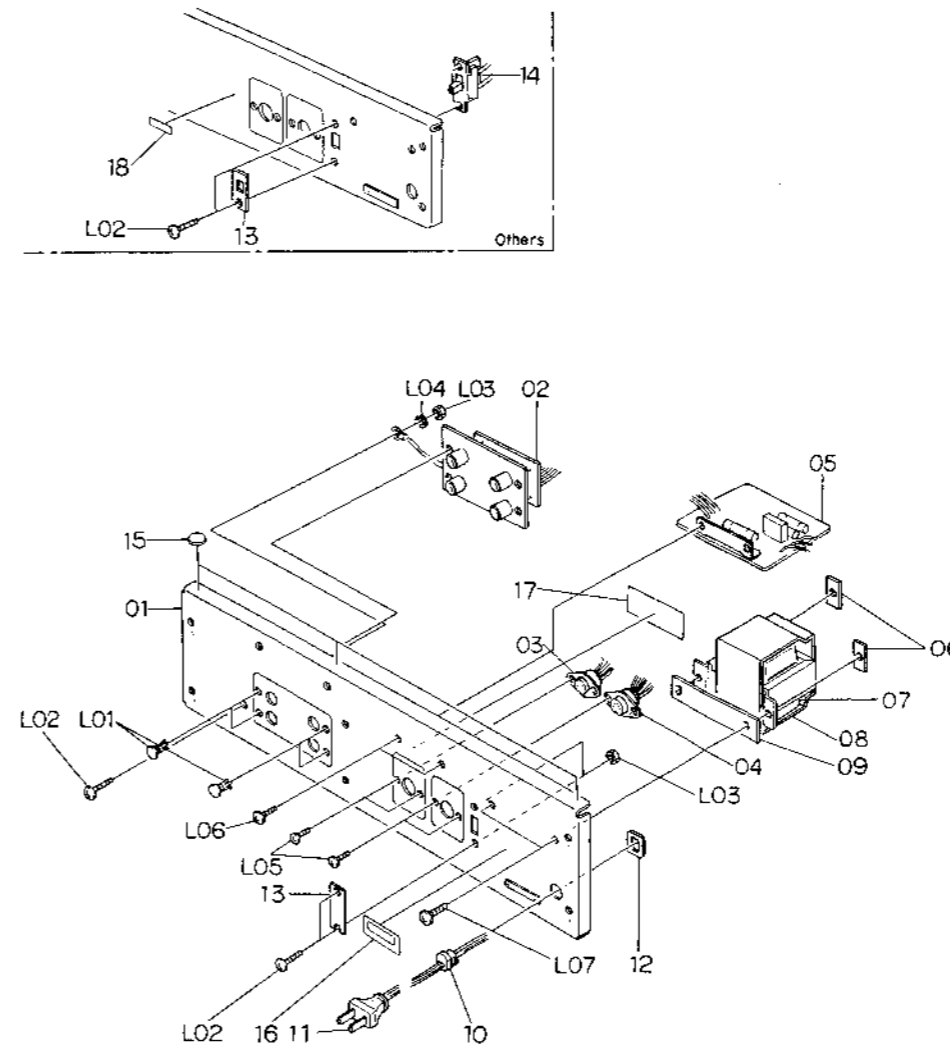


Fig. 8.18

8.19. Capstan Motor Ass'y (E01)

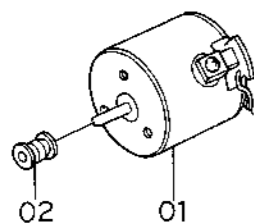


Fig. 8.19

8.20. Reel Motor Ass'y (F01)

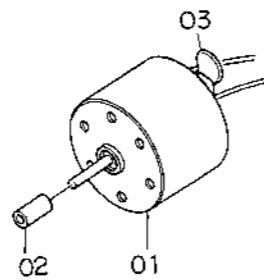


Fig. 8.20

8.21. Control Motor Ass'y (F02)

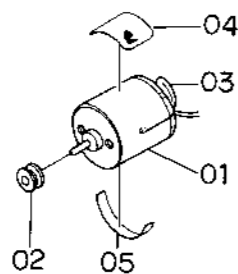


Fig. 8.21

8.22. Azimuth Alignment Motor Ass'y (F03)

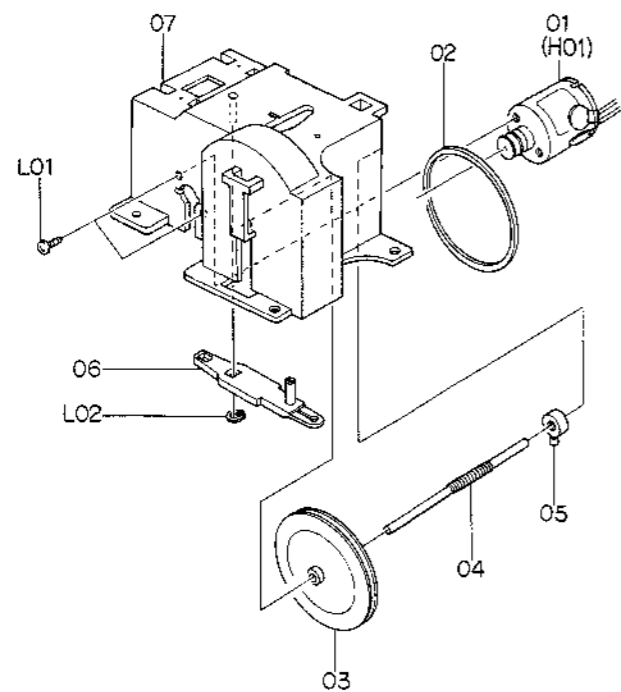


Fig. 8.22

8.23. Head Mount Base Ass'y (G01)

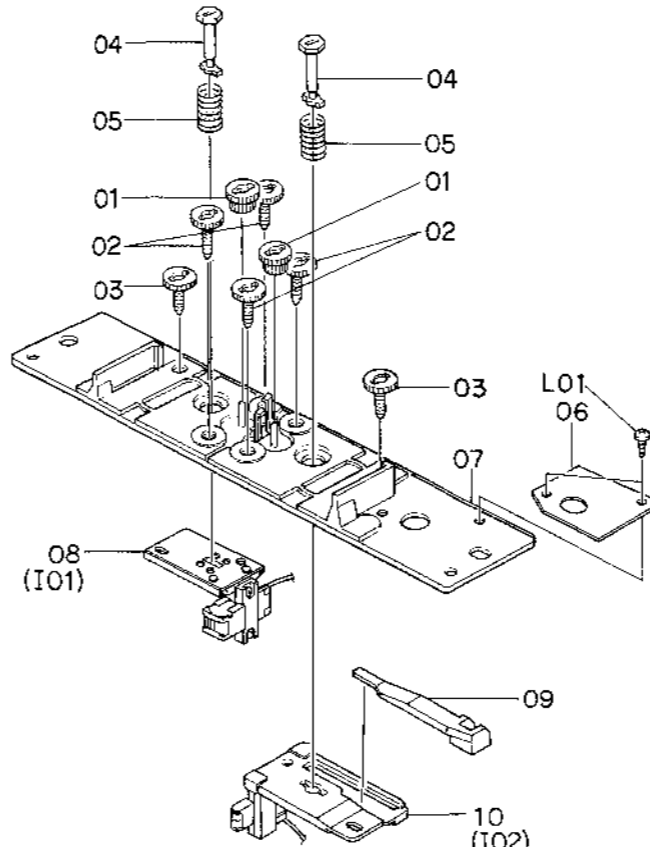


Fig. 8.23

8.24. Supply Pressure Roller Ass'y (G02)

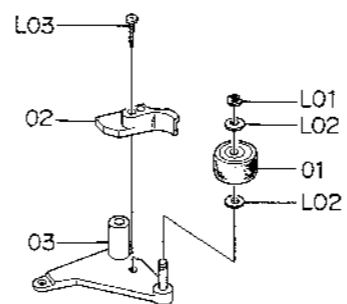


Fig. 8.24

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

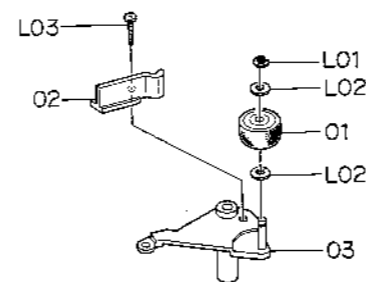


Fig. 8.25

8.26. Head Base Ass'y (G04)

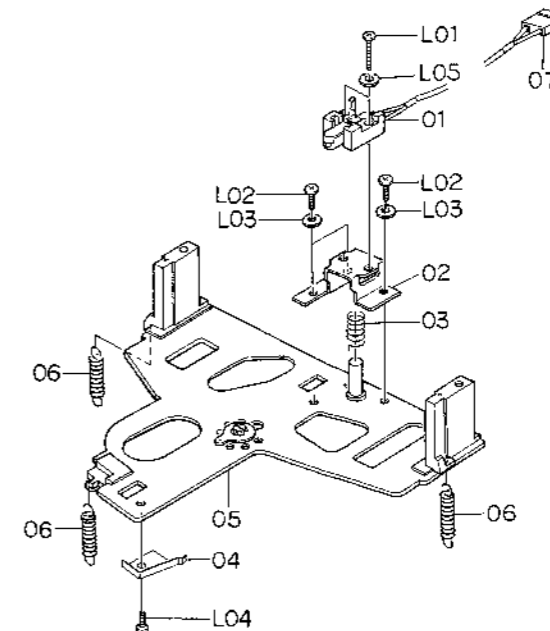


Fig. 8.26

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

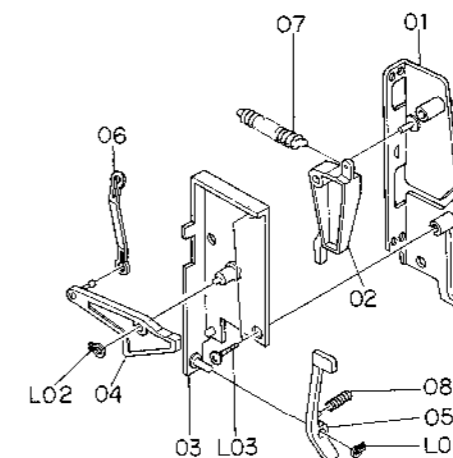


Fig. 8.27

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

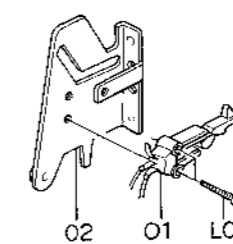


Fig. 8.28

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
E01	CA08246A	Capstan Motor Ass'y Serial No.: A12201001 -	1	G02	CA08053B	Supply Pressure Roller Ass'y Serial No.: A12201001 -	1
01	0C08079G	Motor Pulley	1	01	0C08164G	Pressure Roller	1
02	0C08271A	Capstan Motor	1	02	0C08189C	Supply Tape Guide	1
F01	CA08242A	Reel Motor Ass'y Serial No.: A12201001 -	1	03	CA08061A	Supply Pressure Roller Arm Ass'y	1
01	0C08272A	Reel Motor	1	L01	0E00042A	E-Ring 1.5mm	1
02	0C08063F	Reel Motor Pulley	1	L02	0C08024A	Washer 2mm	2
03	0B09290A	Ceramic Capacitor 0.01 μ 50V Z	1	L03	0E00788A	BT Screw M2x8 Philips Pan Head	1
F02	CA08034A	Control Motor Ass'y Serial No.: A12201001 -	1	G03	CA08079B	Take-up Pressure Roller Ass'y Serial No.: A12201001 -	1
01	0C08137A	Control Motor	1	01	0C08164G	Pressure Roller	1
02	0C08064A	Control Motor Pulley	1	02	0C08181C	Take-up Tape Guide	1
03	0B09292A	Ceramic Capacitor 0.1 μ 50V Z	1	03	CA08073B	Take-up Pressure Roller Arm Ass'y	1
04	0M03985A	Control Motor Label	1	L01	0E00042A	E-Ring 1.5mm	1
05	0M03988A	Motor Seal B	1	L02	0C08024A	Washer 2mm	2
F03	CA08148A	Azimuth Alignment Motor Ass'y Serial No.: A12201001 -	1	L03	0E00788A	BT Screw M2x8 Philips Pan Head	1
01	CA08149A	Azimuth Motor Ass'y	1	G04	CA08322A	Head Base Ass'y Serial No.: A12201001 -	1
02	0C08099B	Control Motor Belt	1	01	GA02103A	EOK Erase Head	1
03	0C08229B	Drive Pulley	1	02	0C08158D	Erase Head Hold Plate	1
04	0C08230B	Drive Pulley Shaft	1	03	0C08166A	Erase Head Hold Plate Spring	1
05	0C08231C	Drive Nut	1	04	0C08174D	Cassette Hold Spring	1
06	0C08232C	Drive Bar	1	05	CA08003Q	Head Base Ass'y	1
07	0C08233G	Drive Unit Base	1	06	0C08175A	Head Base L Spring	3
08	0M04126A	Azimuth Alignment Unit Seal	1	07	0B08905A	2P-H Connector	1
L01	0E00226A	Screw M2.6x4 Philips Pan Head	2	L01	0E00951A	Screw M1.7x7 Philips Pan Head	2
L02	0E00837A	Stopper Ring 3mm	1	L02	0E00909A	Screw M2x6 Philips Pan Head	3
G01	CA08319A	Head Mount Base Ass'y Serial No.: A12201001 -	1	L03	0E00117A	Washer 2mm	3
01	0C08028C	Head Height Adjustment Gear	2	L04	0E00853A	BT Screw M2x3 Philips Pan Head	1
02	0C08027F	Head Height Adjustment Screw	4	L05	0E00952A	Washer 1.7mm	2
03	0C08026D	Azimuth Alignment Screw	2	G05	CA08125A	Cassette Case Holder L Ass'y Serial No.: A12201001 -	1
04	0C08161B	Spring Stopper	2	01	CA08090F	Cassette Case Holder L Sub Ass'y	1
05	0C08187B	Head Plate Spring	2	02	0C08073C	Lid Arm A	1
06	0C08236A	Azimuth Alignment Wire Hold Plate	1	03	0C08195G	Eject Arm Holder	1
07	CA08083C	Head Mount Base Sub Ass'y	1	04	0C08196B	Eject Arm A	1
08	CA08321A	P-8L Playback Head Ass'y	1	05	0C08197C	Eject Arm B	1
09	0C08235A	Azimuth Alignment Plate	1	06	0C08199B	Eject Arm Joint	1
10	CA08320A	R-8L Record Head Ass'y	1	07	0C08114A	Lid Arm Spring	1
L01	0E00917A	BT Screw M2.6x5 Philips Pan Head	2	08	0C08211C	Eject Arm Spring	1
				L01	0E00837A	Stopper Ring 3mm	1
				L02	0E00838A	Stopper Ring 4mm	1
				L03	0E00865A	BT Screw M3x10 Philips Binding Head	2
				G06	CA08022A	Cassette Case Holder R Ass'y Serial No.: A12201001 -	1
				01	0C08133A	Eject Sensor	1
				02	CA08044A	Cassette Case Holder R Sub Ass'y	1
				L01	0E00840A	BT Screw M2x8 Philips Pan Head	2

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

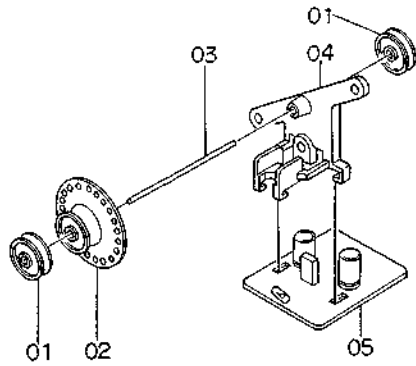


Fig. 8.29

8.30. Pneumatic Damper Ass'y (G08)

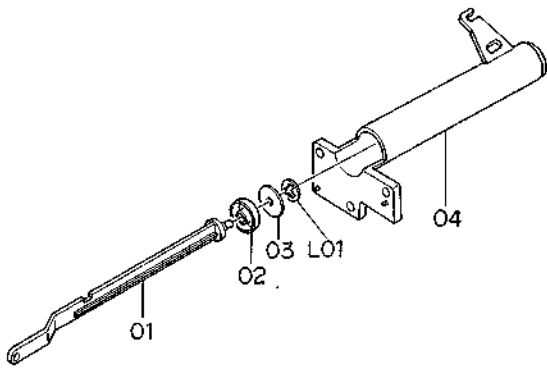


Fig. 8.30

8.31. Pitch Control Holder Ass'y (G09)

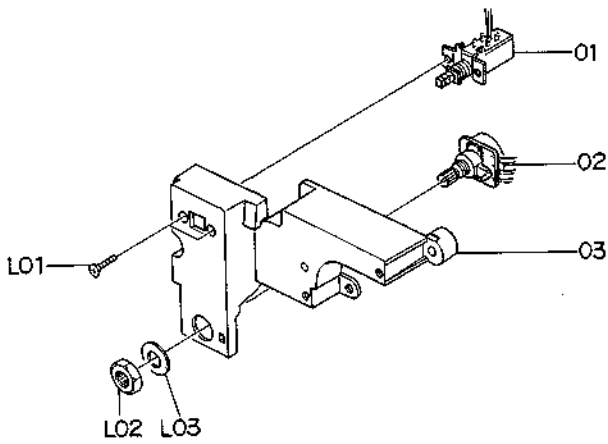


Fig. 8.31

8.32. Azimuth Motor Ass'y (H01)

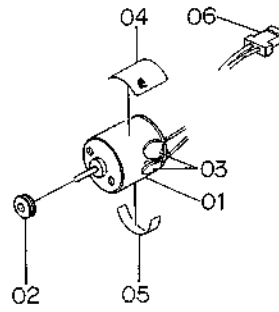


Fig. 8.32

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

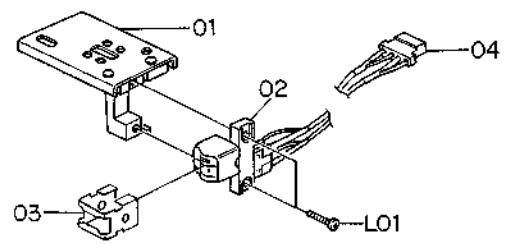


Fig. 8.33

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

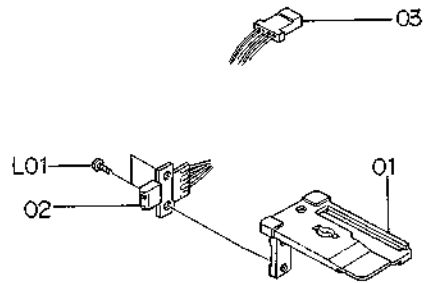


Fig. 8.34

10. EQ. AMP. FREQUENCY RESPONSE

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
G07	CA08099A	Auto Shut-off Ass'y Serial No.: A12201001 -	1	H01	CA08149A	Azimuth Motor Ass'y Serial No.: A12201001 -	1
01	0C08047A	Shut-off Pulley A	2	01	0C08137A	Control Motor	1
02	0C08206B	Shut-off Pulley B	1	02	0C08064A	Control Motor Pulley	1
03	0C08210A	Shut-off Pulley Shaft	1	03	0B09292A	Ceramic Capacitor 0.1μ 50V Z	2
04	0C08207B	Shut-off Pulley Holder	1	04	0M03985A	Motor Label 730	1
05	BA04070A	Shut-off P.C.B. Ass'y	1	05	0M03988A	Motor Seal A	1
				06	0B08708A	2P Connector	1
G08	CA08030A	Pneumatic Damper Ass'y Serial No.: A12201001 -	1	I01	CA08321A	P-8L Playback Head Ass'y Serial No.: A12201001 -	1
01	0C08058C	Damper Piston	1	01	CA08307A	Playback Head Plate Ass'y	1
02	0C08102C	Damper Ring	1	02	GA02034A	P-8LH Playback Head	1
03	0C08010C	Damper Plate	1	03	0C08169D	Pad Lifter 54	1
04	0C08059D	Sylinder	1	04	0B08903A	4P-H Connector	1
L01	0E00874A	Stopper Ring CS 2mm	1	L01	0E00886A	Screw M1.7x6.5 Philips Pan Head	2
G09	CA08105A	Pitch Control Holder Ass'y Serial No.: A12201001 -	1	I02	CA08320A	R-8L Record Head Ass'y Serial No.: A12201001 -	1
01	0B07283A	Memory Switch	1	01	0C08234B	Record Head Plate	1
02	0B07282A	Volume Control 20K (B)	1	02	GA01050A	R-8LH Record Head	1
03	0C08214D	Pitch Control Holder	1	03	0B08904A	4P-H Connector	1
L01	0E00125A	Screw M2x6 Philips Countersunk	2	L01	0E00887A	Screw M1.7x4 Philips Pan Head	2
L02	-	Volume Nut	(1)				
L03	-	Volume Washer	(1)				

10.1. Playback Frequency Response

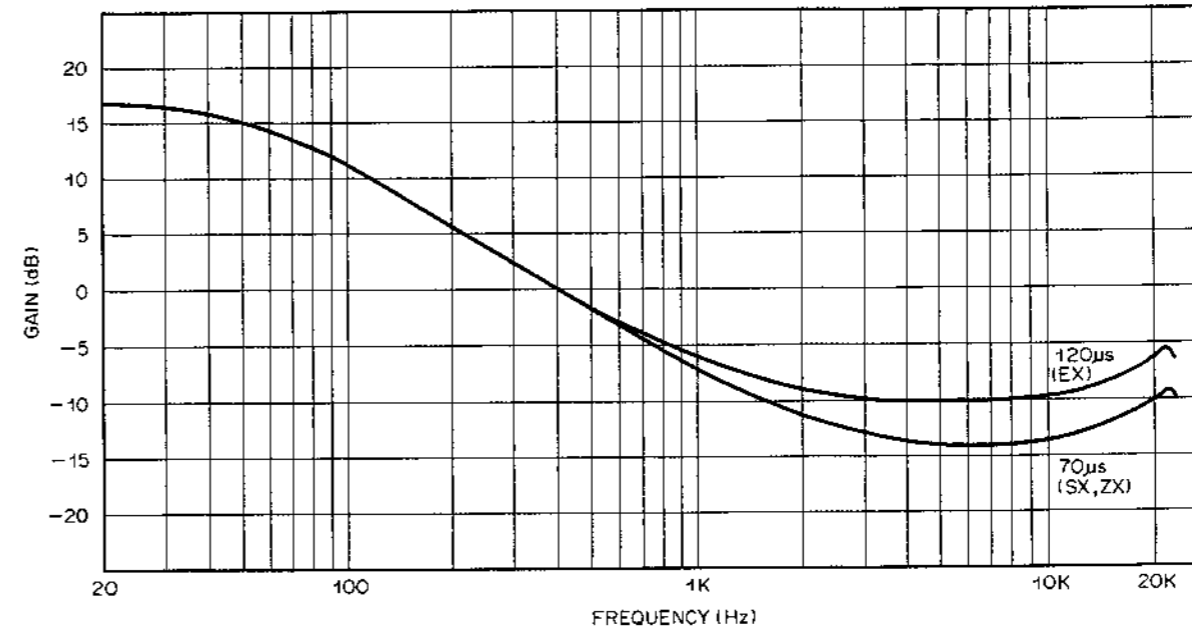


Fig. 10.1

10.2. Record Current Frequency Response

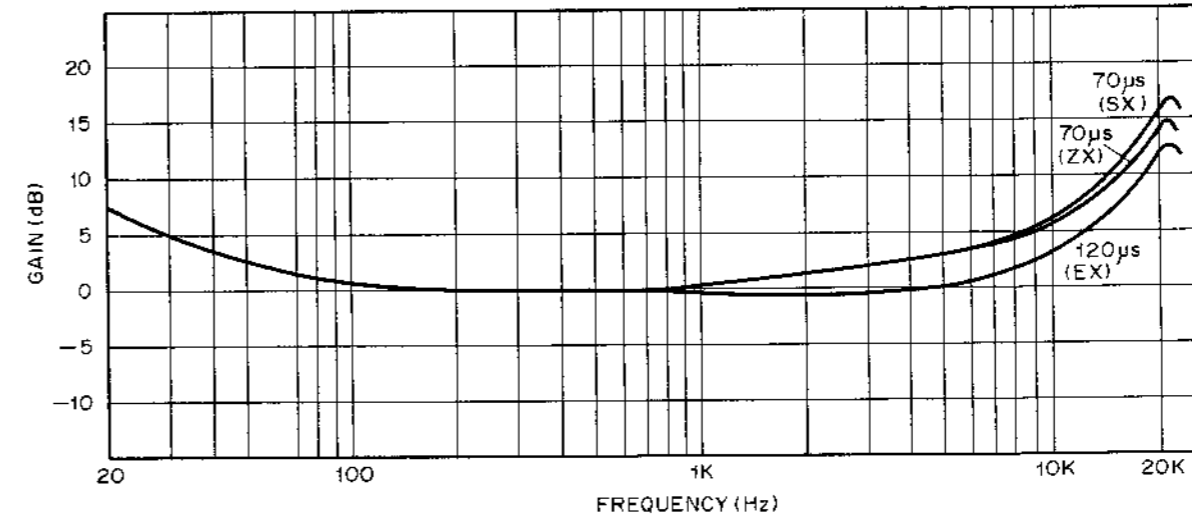


Fig. 10.2

9. OVERALL TIMING CHART

Mode	PLAYBACK			RECORD				CUE			
	Stop	Play	Stop	Rec	Rec/Play	Rec/Pause	Rec/Play	Stop	Stop	FF/Rew/Pause	Stop
Tape		470ms 300ms	120ms 180ms		470ms 500ms	130ms 160ms	220ms 120ms	130ms 160ms		100ms	100ms
Output		300ms			300ms						
Bias					300ms						

Fig. 9

11. BLOCK DIAGRAMS

11.1. Amplifier Section

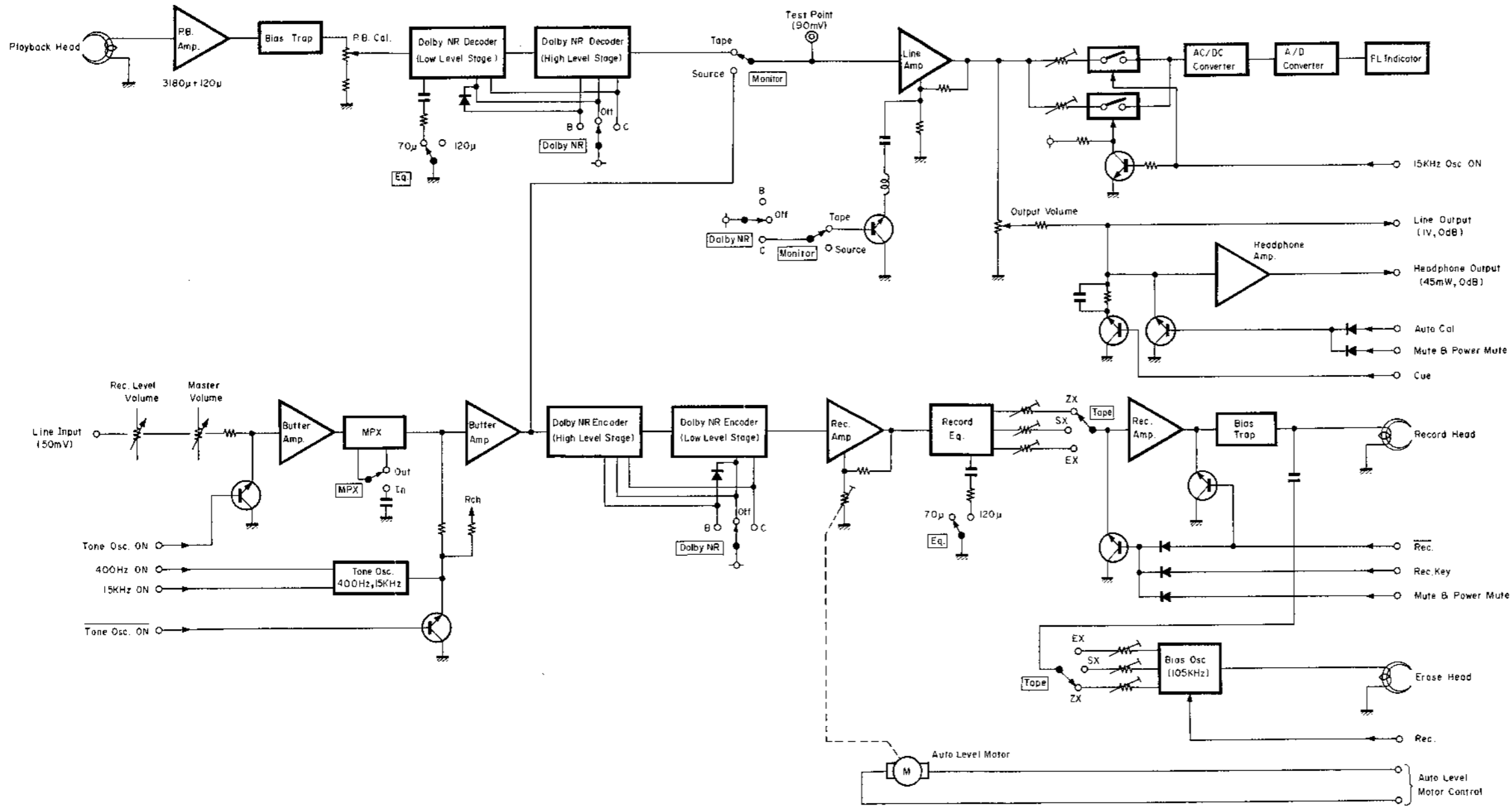


Fig. 11.1

11.2. Mechanism Control Section

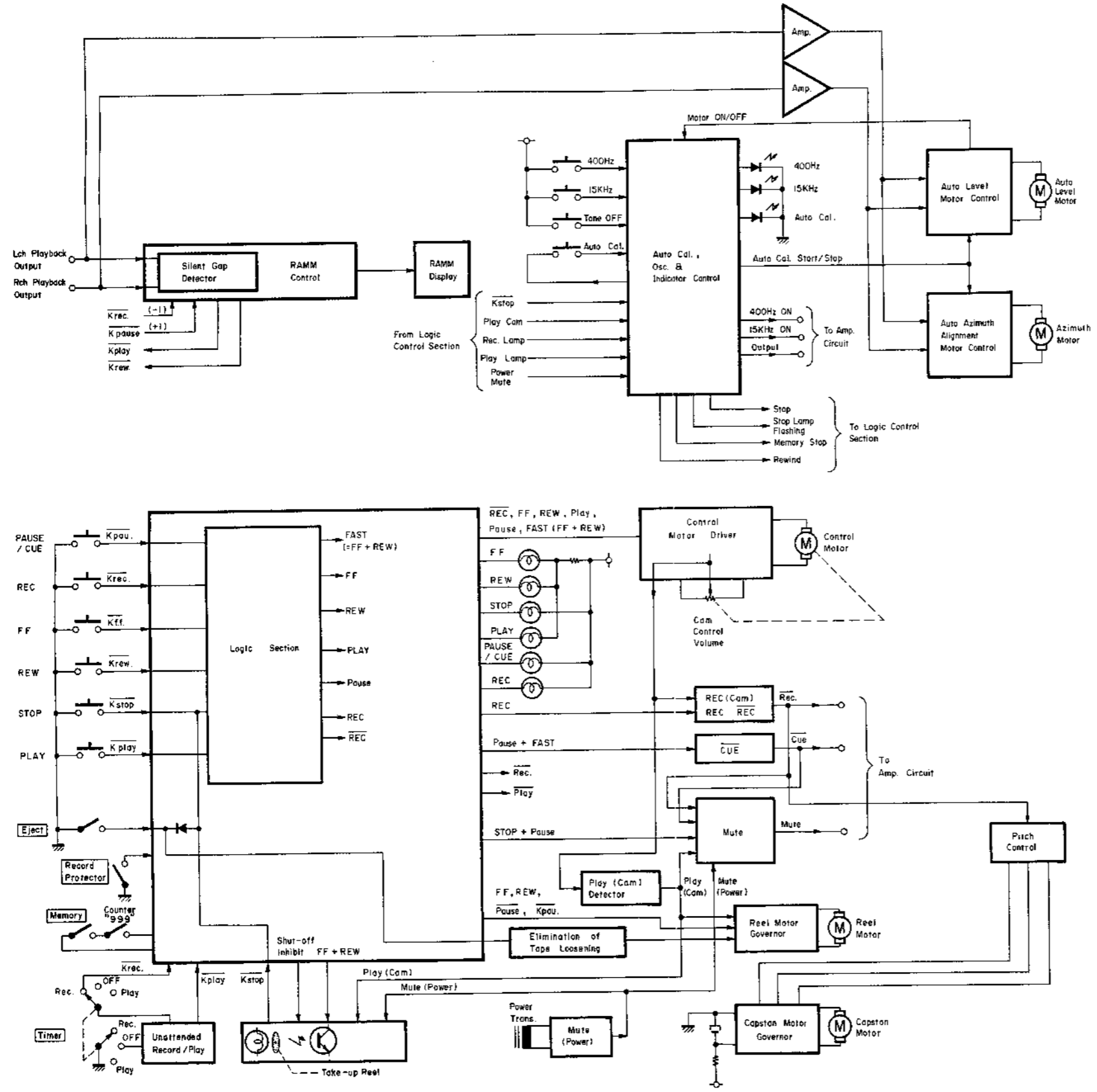


Fig. 11.2

12. WIRING DIAGRAM

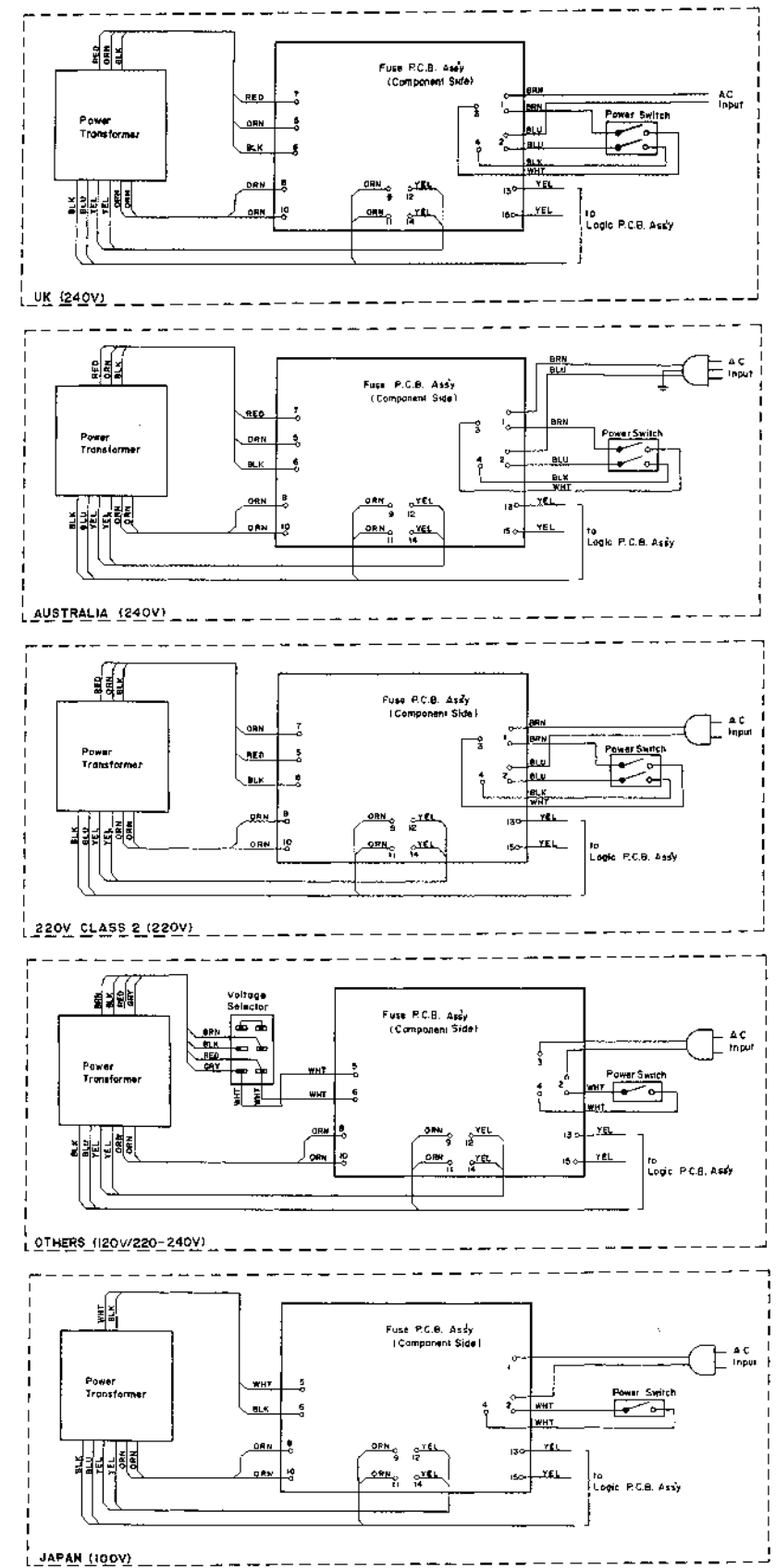
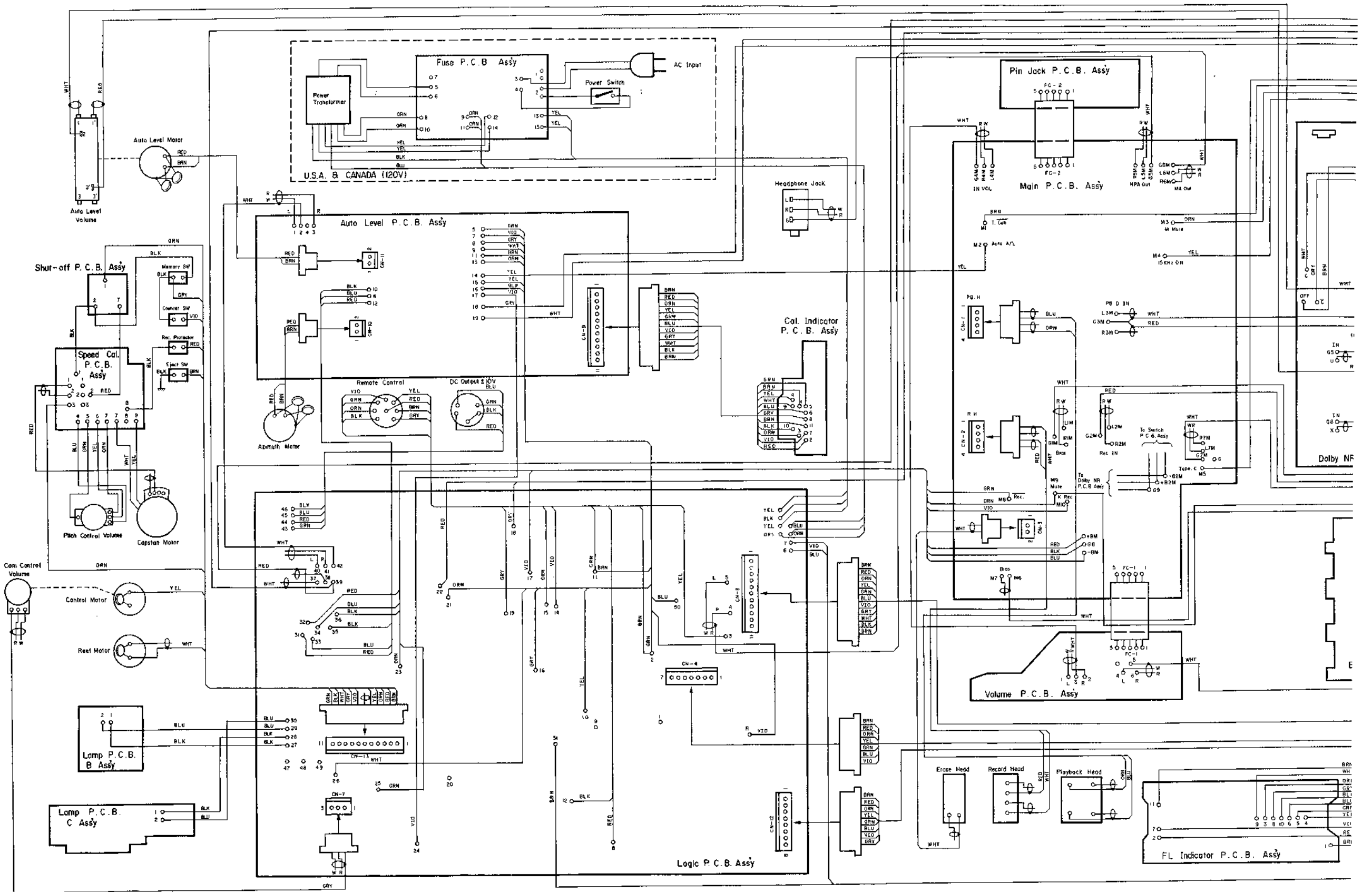


Fig. 12.1



- Notes: 1. Table of wire colors
 BLK - Black
 BLU - Blue
 ORN - Orange
 GRY - Gray
 GRN - Green
 RED - Red
 BRN - Brown
 YEL - Yellow
 WHT - White
 VIO - Violet
2. Component side view of the P.C.B. is illustrated unless otherwise specified.

Fig. 12.2

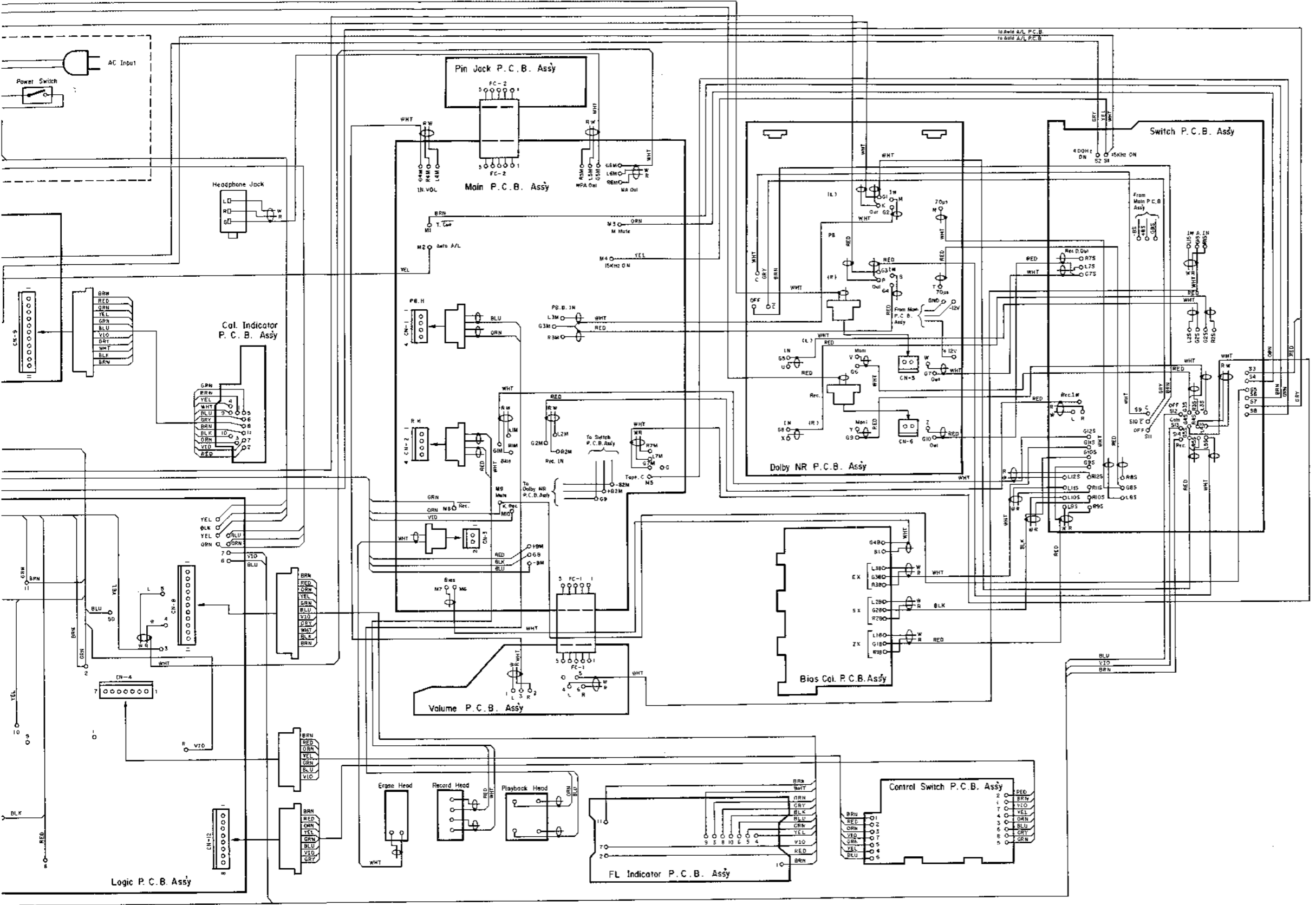
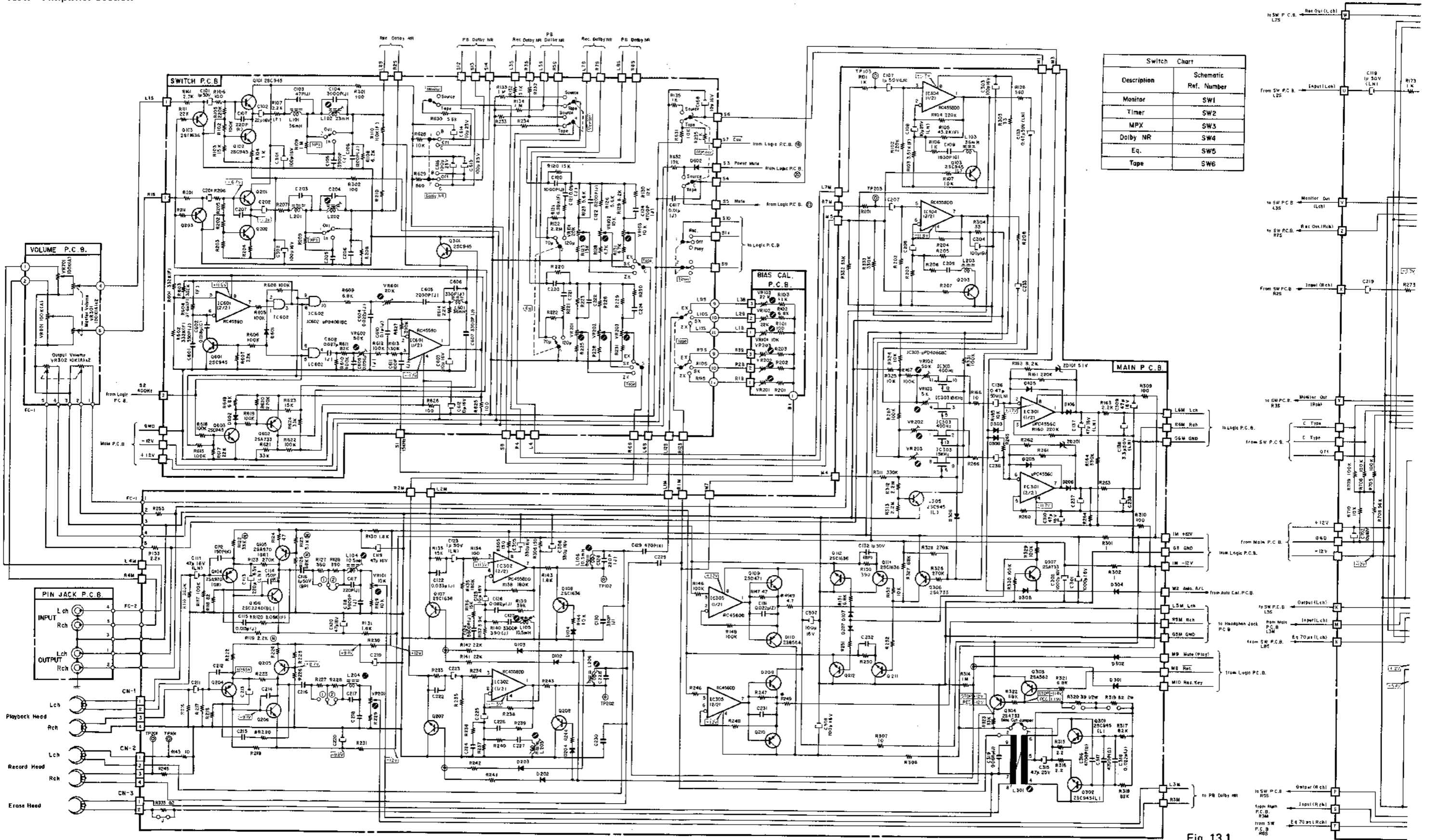


Fig. 12.2

13. SCHEMATIC DIAGRAMS

13.1. Amplifier Section



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

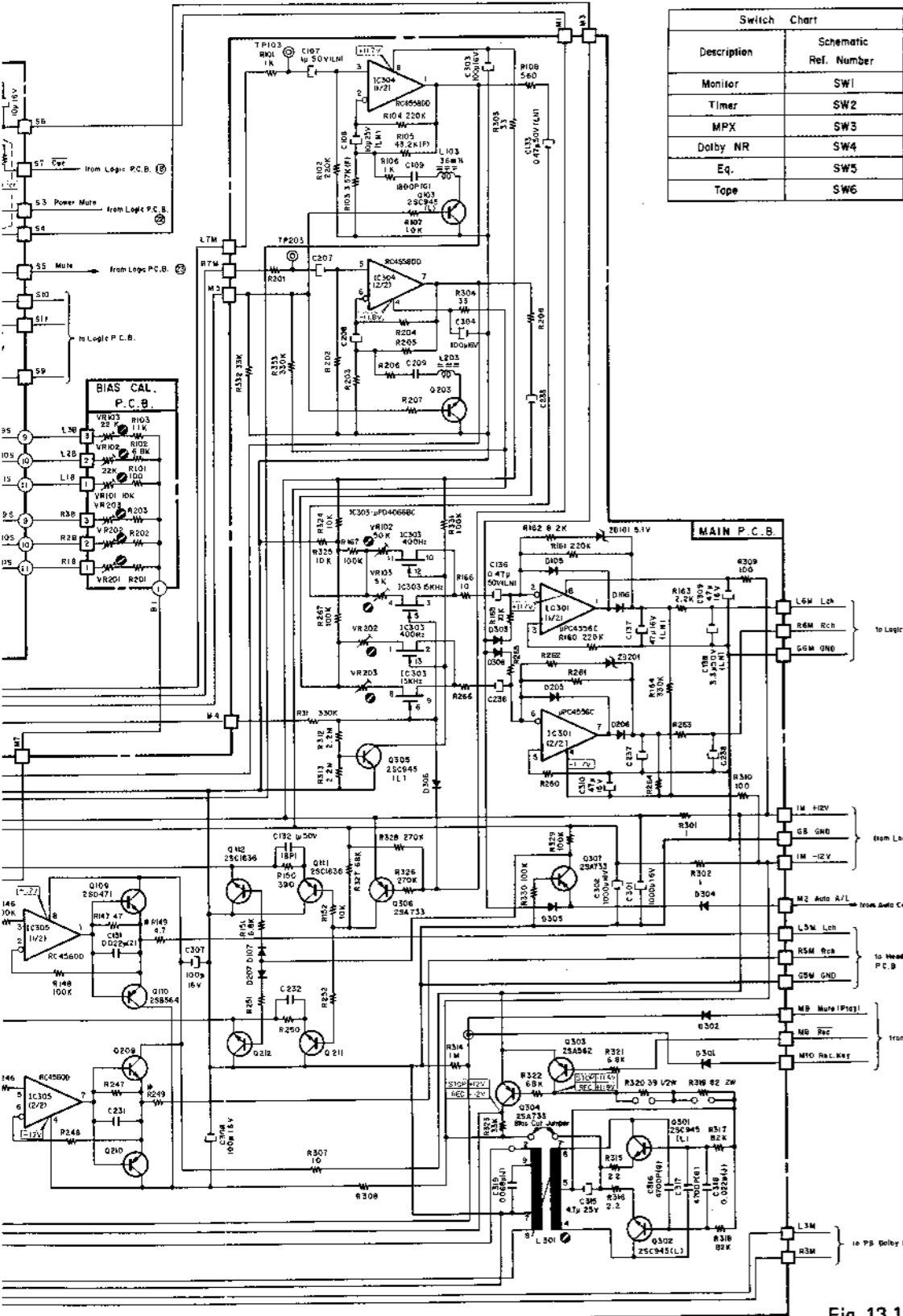
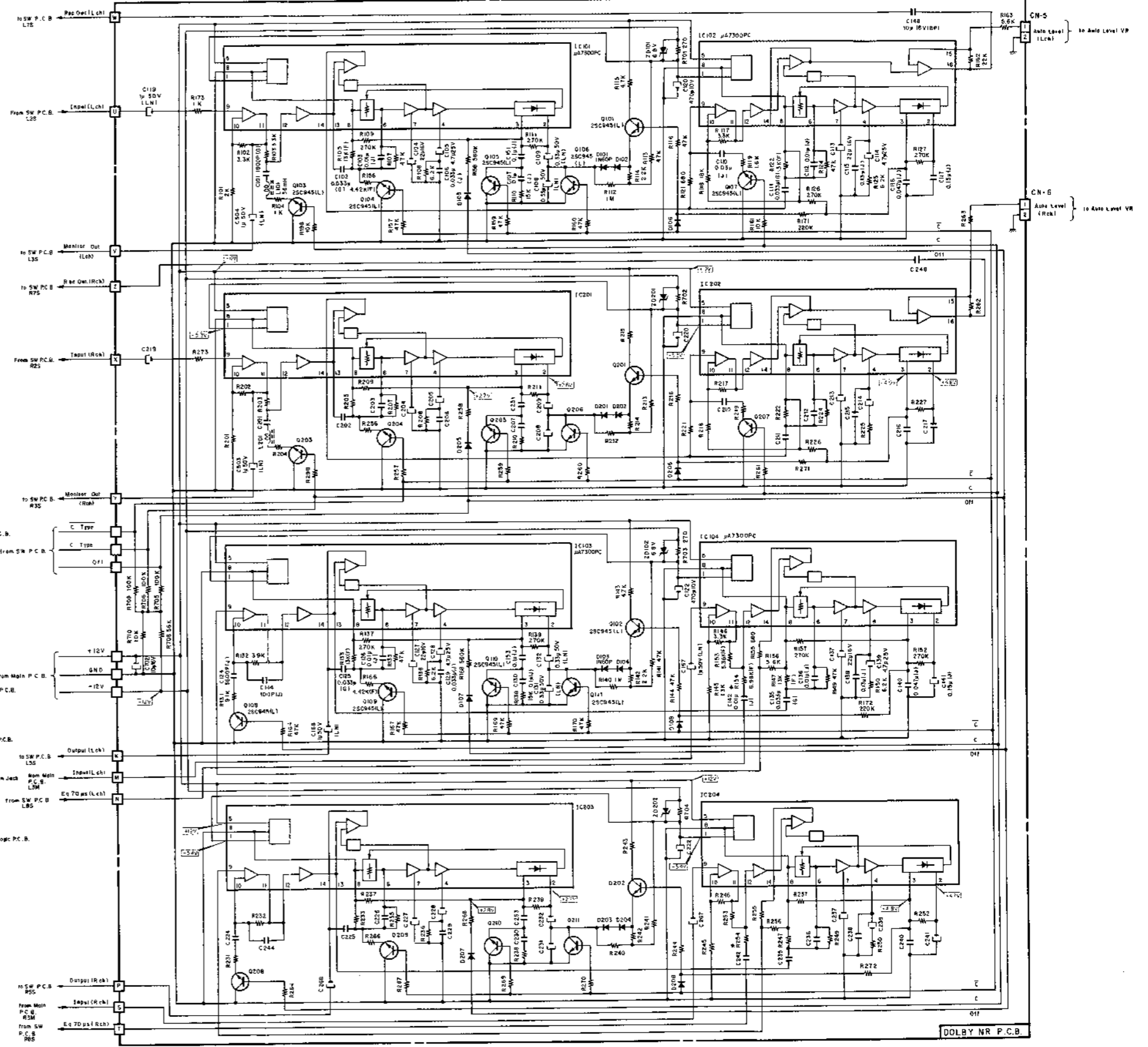
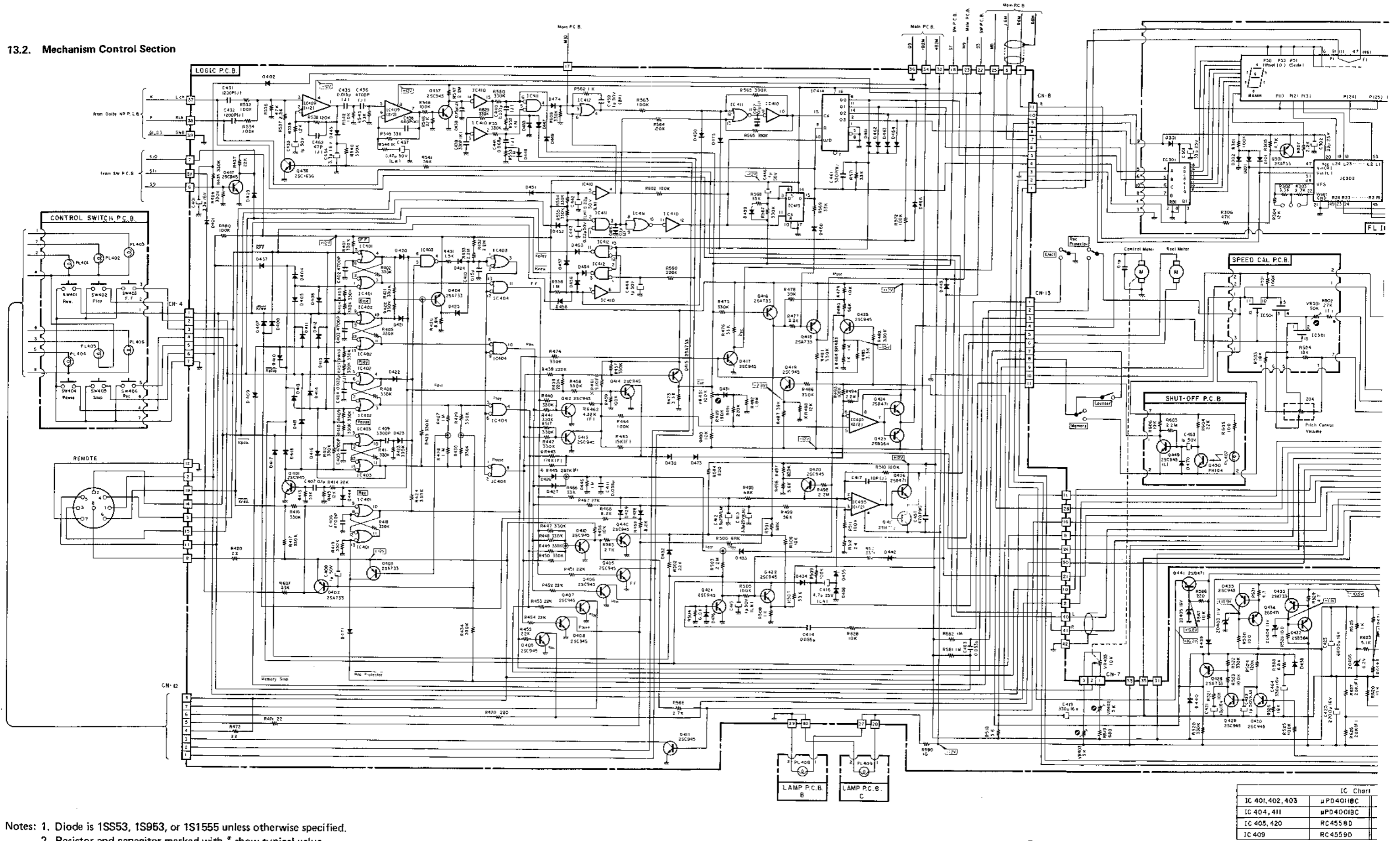


Fig. 13.1



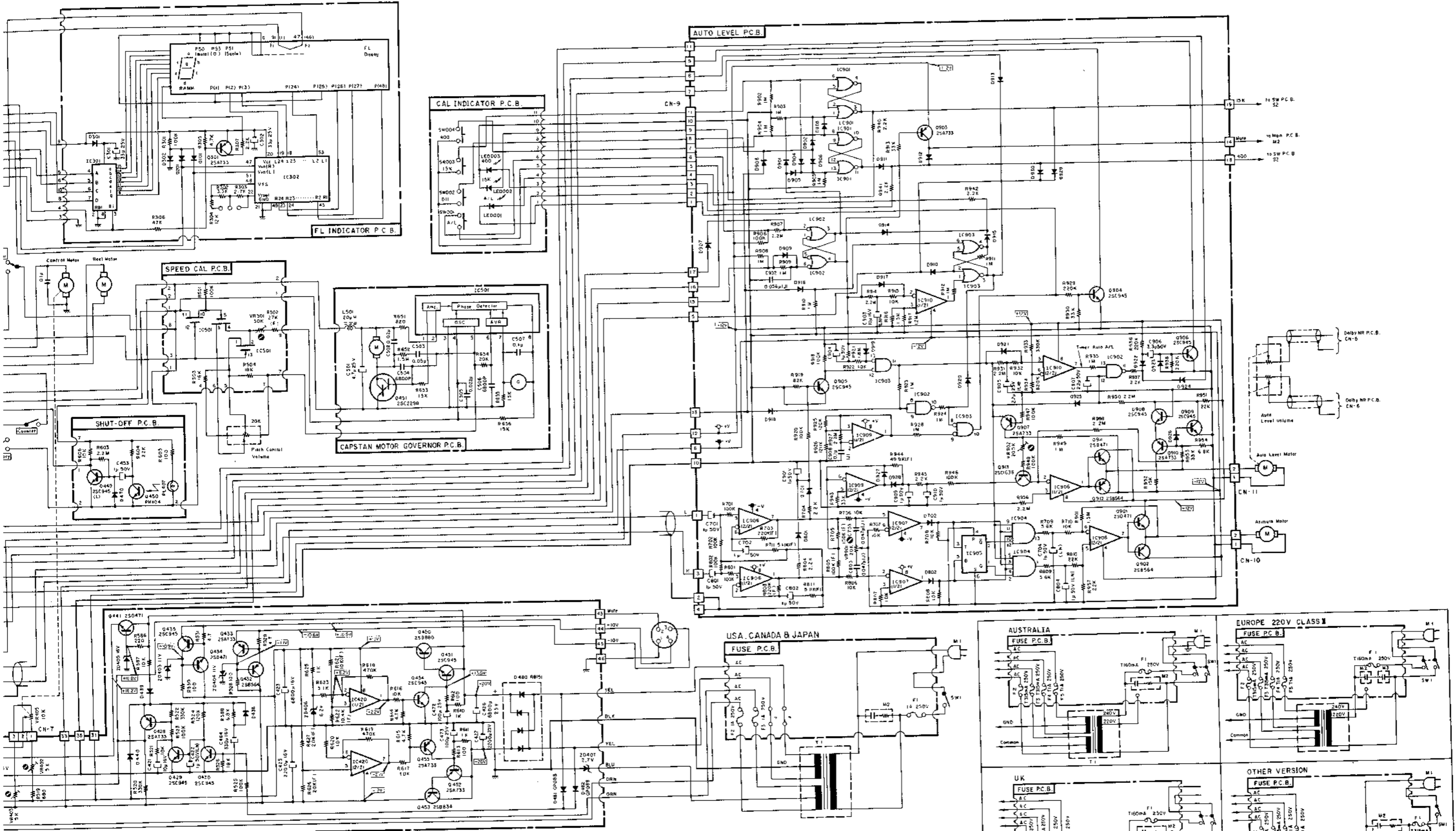
13.2. Mechanism Control Section



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

IC Chart	
IC 401, 402, 403	μPD401HC
IC 404, 411	μPD4001BC
IC 405, 420	RC4558D
IC 409	RC4559D

Fig. 13.2.1 Serial No.: A12204890 -



IC Chart (Logic)

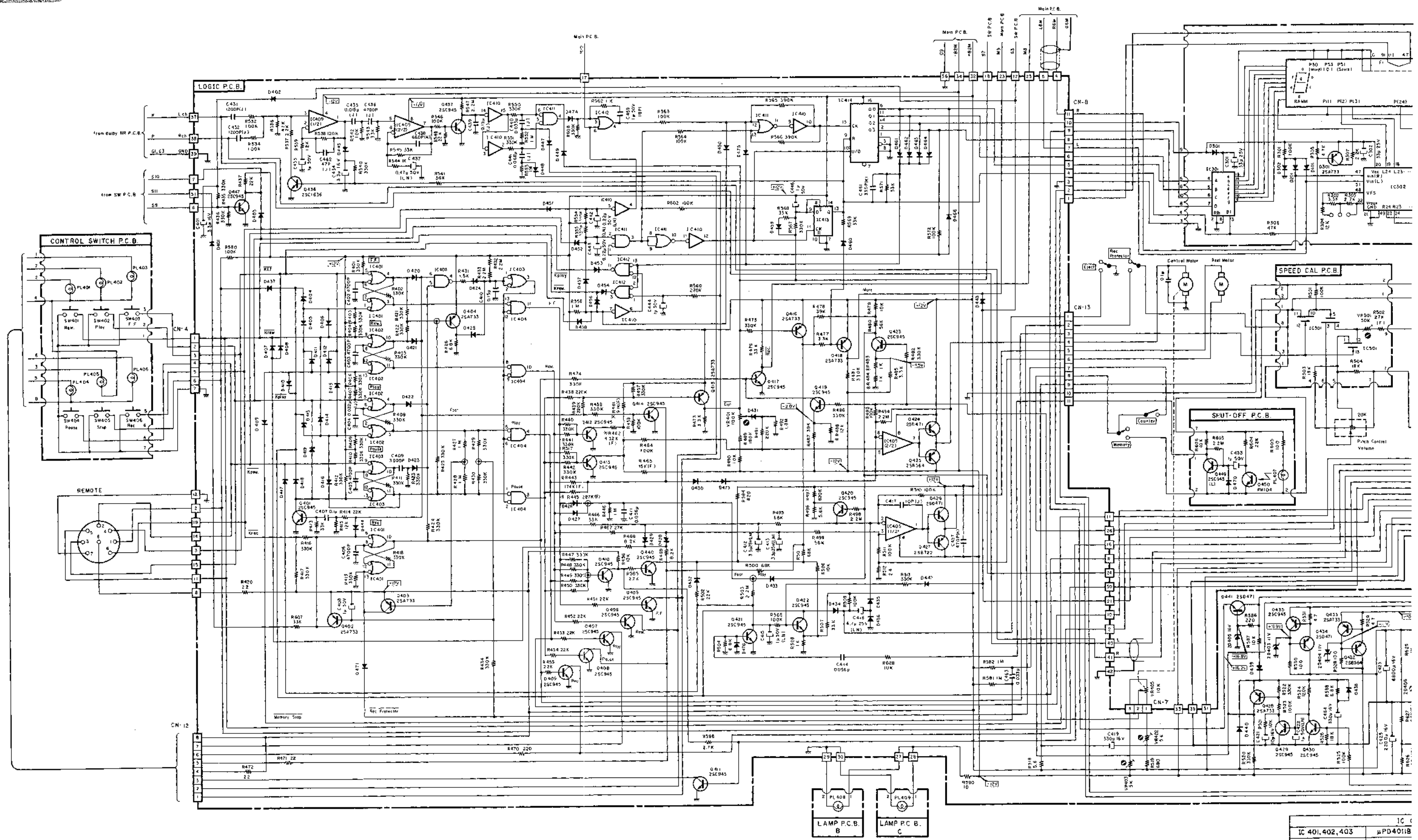
IC 401, 402, 403	μPD401BC	IC 410	μPD4049BC
IC 404, 411	μPD400IBC	IC 412	μPD4071BC
IC 405, 420	RC4558D	IC 413	TC4013BP
IC 409	RC4559D	IC 414	TC4510BP

IC Chart (FL Indicator, Speed Cal.)

IC 301	TC5022BP
IC 302	MSM803RS
IC 501	μPD4066BC

IC Chart (Auto Level)

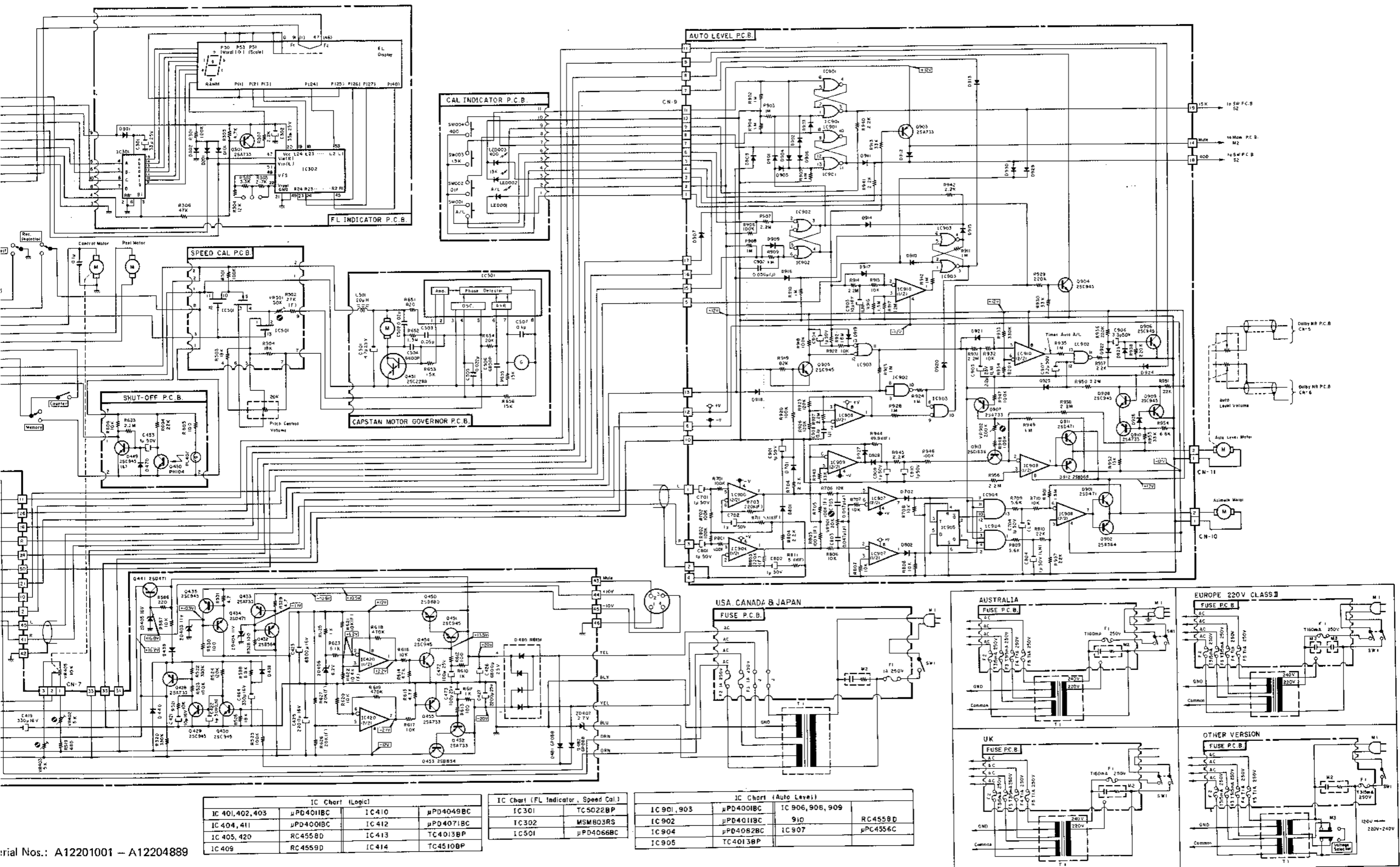
IC 901, 903	μPD400IBC	IC 906, 908, 909	RC4558D
IC 902	μPD401IBC	910	μPC4556C
IC 904	μPD4082BC	IC 907	
IC 905	TC4013BP		



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

IC	IC
IC 401, 402, 403	μPD4011B
IC 404, 411	μPD4001B
IC 405, 420	RC4558D
IC 409	RC4559D

Fig. 13.2.2 Serial Nos.: A12201001 - A12204889



IC Chart (Logic)			
IC 401, 402, 403	μPD4011BC	IC 410	μPD4049BC
IC 404, 411	μPD4001BC	IC 412	μPD4071BC
IC 405, 420	RC4558D	IC 413	TC40138P
IC 409	RC4559D	IC 414	TC45108P

IC Chart (FL Indicator, Speed Cal.)	
IC 301	TC50228P
IC 302	MSM803RS
IC 501	μPD4066BC

IC Chart (Auto Level)			
IC 901, 903	μPD4001BC	IC 906, 908, 909	RC4558D
IC 902	μPD4011BC	910	μPC4556C
IC 904	μPD40828C	IC 907	
IC 905	TC40138P		

Serial Nos.: A12201001 - A12204889

13.3. Attention to Servicemen

(1) Parts Replacement

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

- (a) Power Supply Circuit
Power Cord
Power Transformer T1
Power Switch SW1
- (b) Fuse P.C.B. Ass'y
Fuses: F1, 2, 3, 4, 5
Spark Killers
- (c) Logic P.C.B. Ass'y
Diode Bridge: D480
Power Transistors: Q424, 425, 426, 427, 432, 434, 441, 450, 453
Fail Safe Type Resistors: R420, 471, 472, 512, 518, 528, 529, 530, 531, 586, 590
- (d) Auto Level P.C.B. Ass'y
Power Transistors: Q901, 902, 911, 912
- (e) Control Switch P.C.B. Ass'y
Lamps: PL401-406
- (f) Lamp P.C.B. B Ass'y
Lamp: PL408
- (g) Lamp P.C.B. C Ass'y
Lamp: PL409
- (h) Shut-off P.C.B. Ass'y
Fail Safe Type Resistor: R605
- (i) Main P.C.B. Ass'y
Power Transistors: Q109, 110, 209, 210
Fail Safe Type Resistors: R149, 249, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 315, 316, 319, 320, 335
- (j) Switch P.C.B. Ass'y
Fail Safe Type Resistors: R301, 302, 625, 626

(2) Insulation Check

Before returning the repaired N-682ZX 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.

13.4. IC Block Diagrams

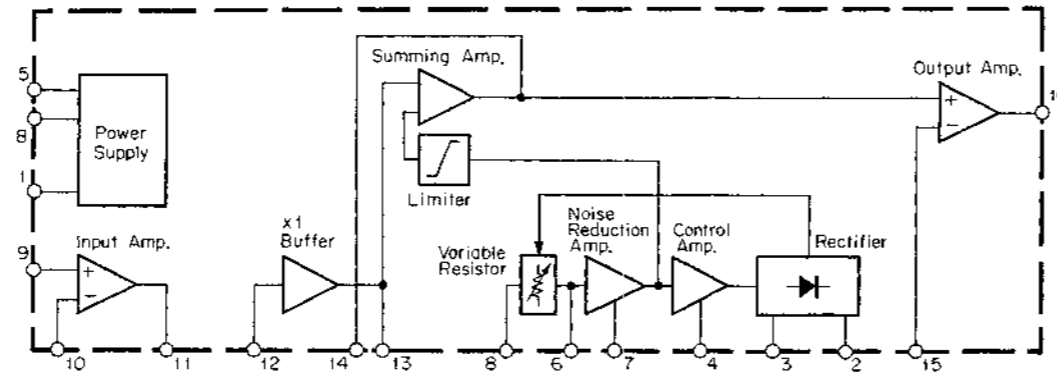


Fig. 13.3 Dolby NR IC μ A7300PC

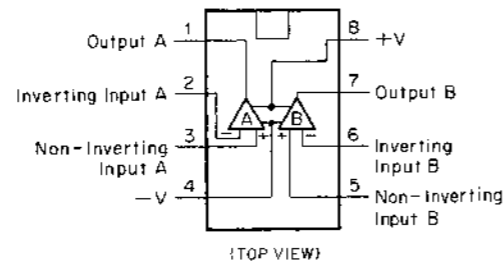


Fig. 13.4 OP Amp. IC 4558, 4559, 4556, 4560

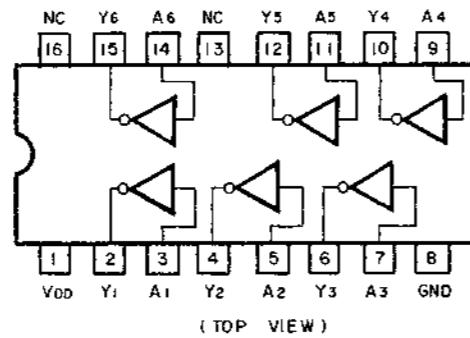


Fig. 13.6 Inverter C-MOS IC μ PD4049BC

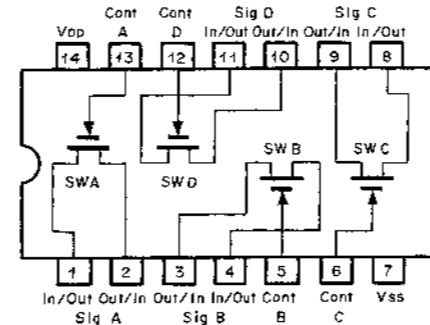


Fig. 13.5 Bilateral Switch C-MOS IC μ PD4066BC

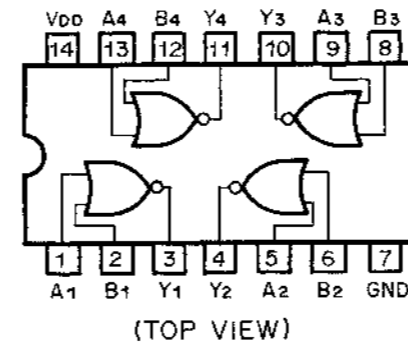


Fig. 13.7 NOR Gate C-MOS IC μ PD4001BC

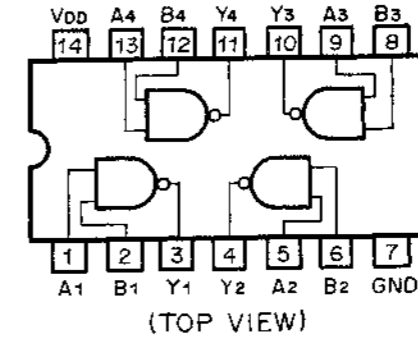


Fig. 13.8 NAND Gate C-MOS IC μ PD4011BC

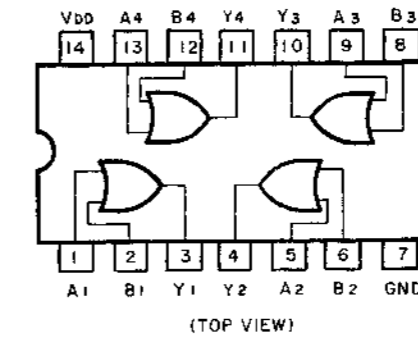


Fig. 13.9 OR Gate C-MOS IC μ PD4071BC

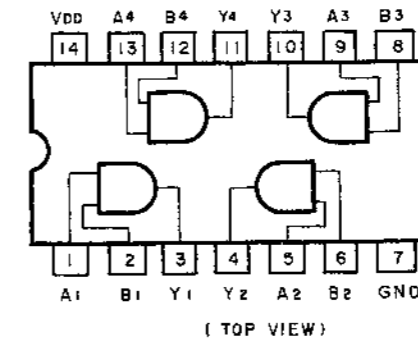


Fig. 13.10 AND Gate C-MOS IC μ PD4081BC

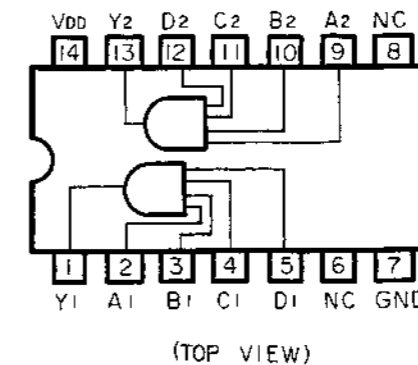


Fig. 13.11 AND Gate C-MOS IC μ PD4082BC

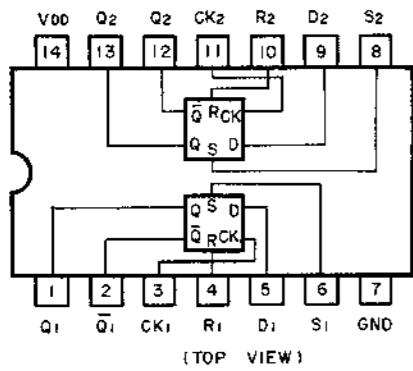


Fig. 13.12 D-Type Flip-Flop C-MOS IC TC4013BP

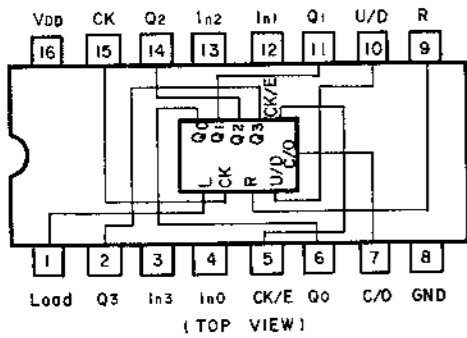


Fig. 13.13 BCD Up/Down Counter C-MOS IC TC4510BP

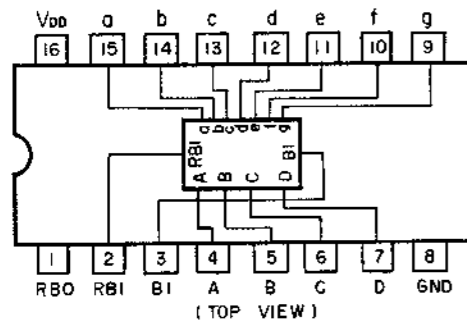


Fig. 13.14 BCD to 7-segment Decoder/Driver C-MOS IC TC5022BP

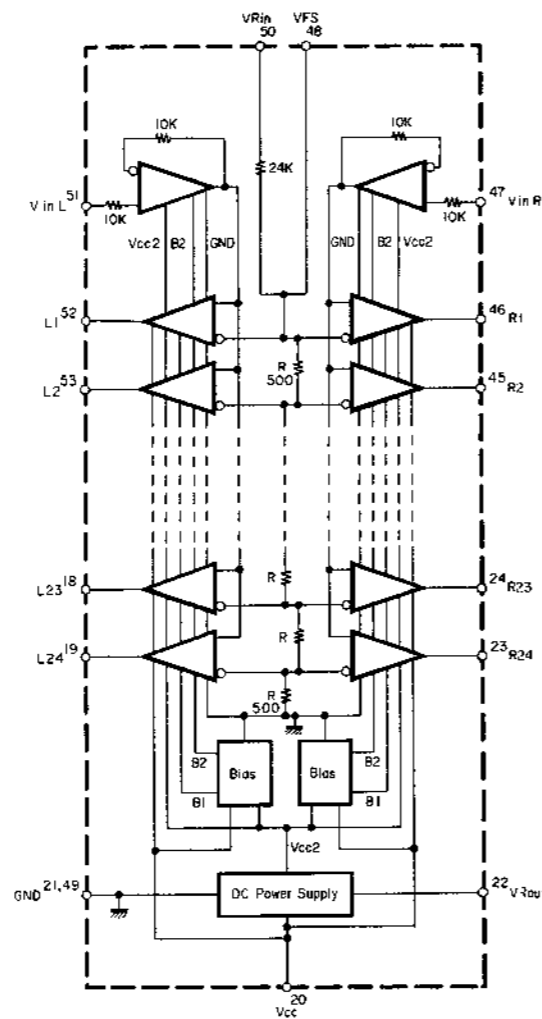


Fig. 13.15 2-Channel 24-Level Comparator for Level Meter MSM803RS

14. SPECIFICATIONS

Power Source	100, 120, 120/220-240 or 240 V AC; 50/60 Hz (According to country of sale)
Power Consumption	36 W max.
Tape Speed	1-7/8 ips (4.8 cm/sec)
Wow and Flutter	Less than 0.04% wtd rms Less than 0.08% wtd peak
Frequency Response	20-22,000 Hz ± 3 dB (recording level -20 dB, ZX tape) 20-20,000 Hz ± 3 dB (recording level -20 dB, SX, EXII tape)
Signal to Noise Ratio	Dolby C-Type NR on <70 μs, ZX tape> Better than 72 dB (400 Hz, 3% THD, IHF A-wtd rms) Dolby B-Type NR on <70 μs, ZX tape> Better than 66 dB (400 Hz, 3% THD, IHF A-wtd rms)
Total Harmonic Distortion	Less than 0.8% (400 Hz, 0 dB ZX tape) Less than 1.0% (400 Hz, 0 dB, SX, EXII tape)
Erasure	Better than 60 dB (below saturation level, 1 kHz, ZX tape)
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
Output (Line)	1 V (400 Hz, 0 dB, output level control at max.), 2.2 k ohms
Output (Headphones)	45 mW (400 Hz, 0 dB, output level control at max.), 8-ohm load
BlackBox Series DC Output	± 10 V, 125 mA max.
Dimensions	482 (W) x 143 (H) x 340 (D) millimeters 19 (W) x 5-5/8 (H) x 13-3/8 (D) inches
Approximate Weight	9 kg 19 lb. 13 oz

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