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1. GENERAL

1.1. Control Functions

The Nakamichi 682ZX control functions are shown below:

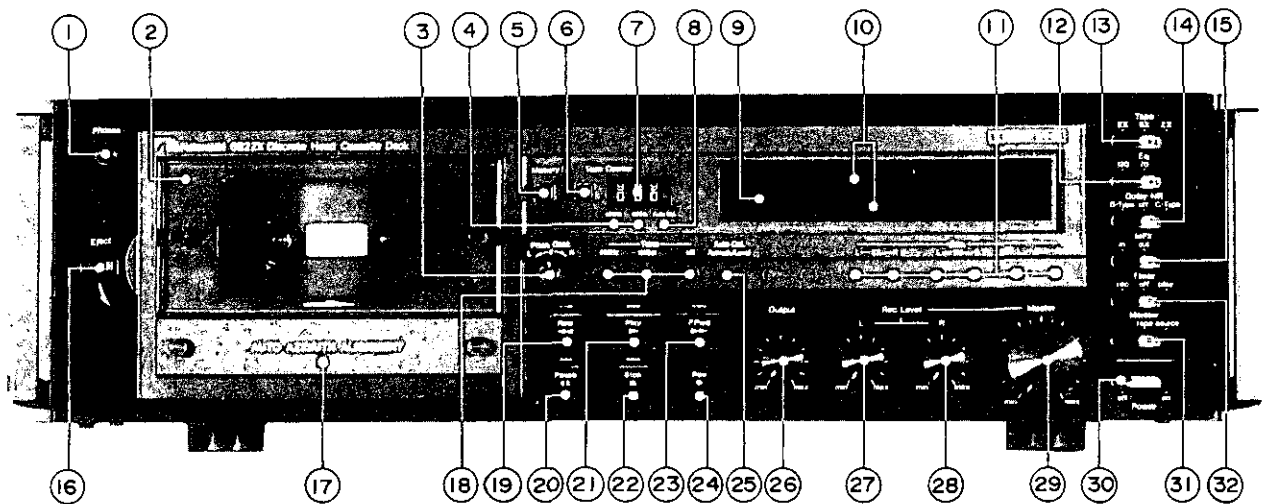


Fig. 1.1 Front View

- | | |
|---------------------------------------|--------------------------------|
| 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 |

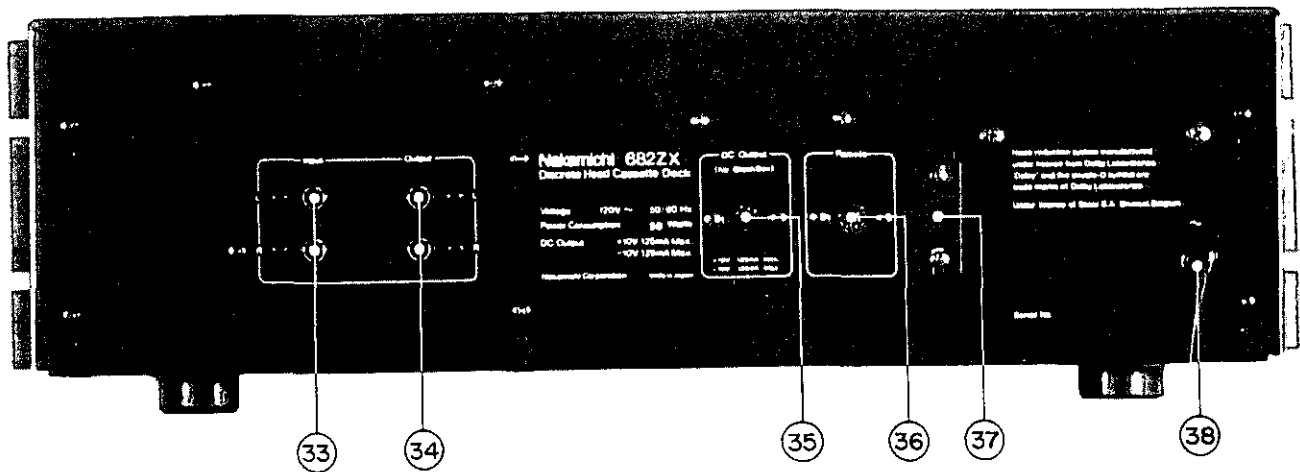


Fig. 1.2 Rear View

- 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.

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.

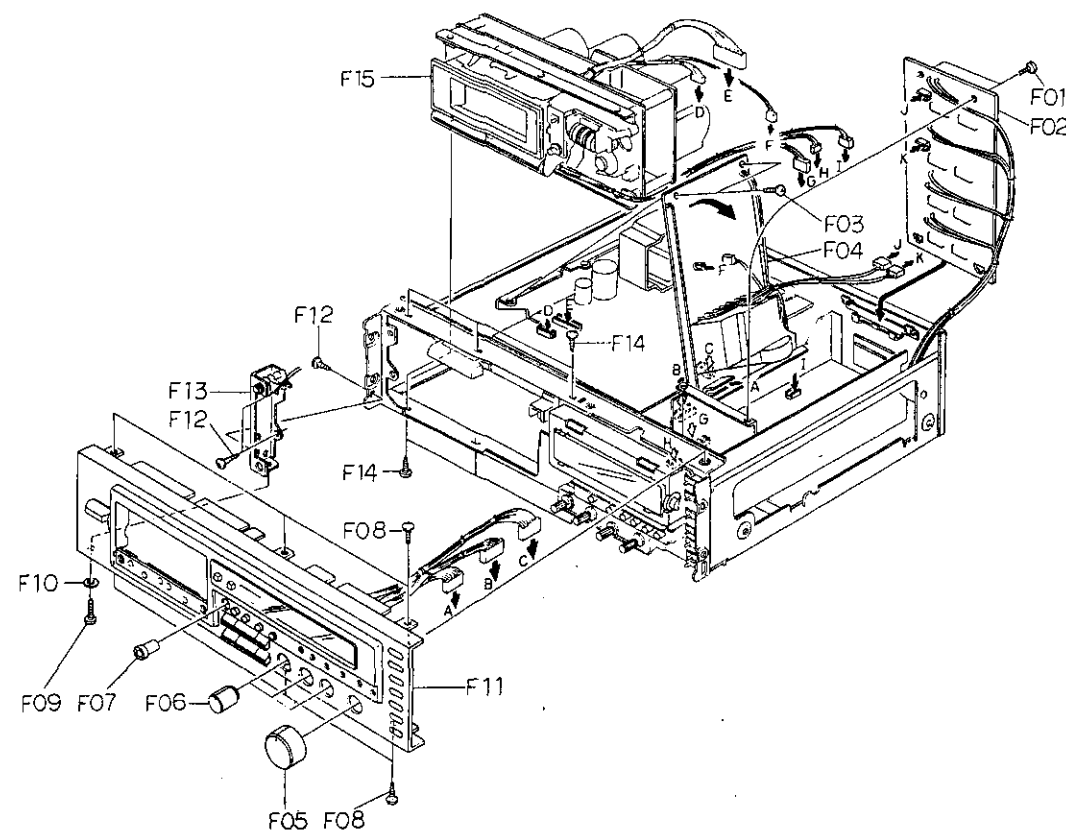


Fig. 2.2

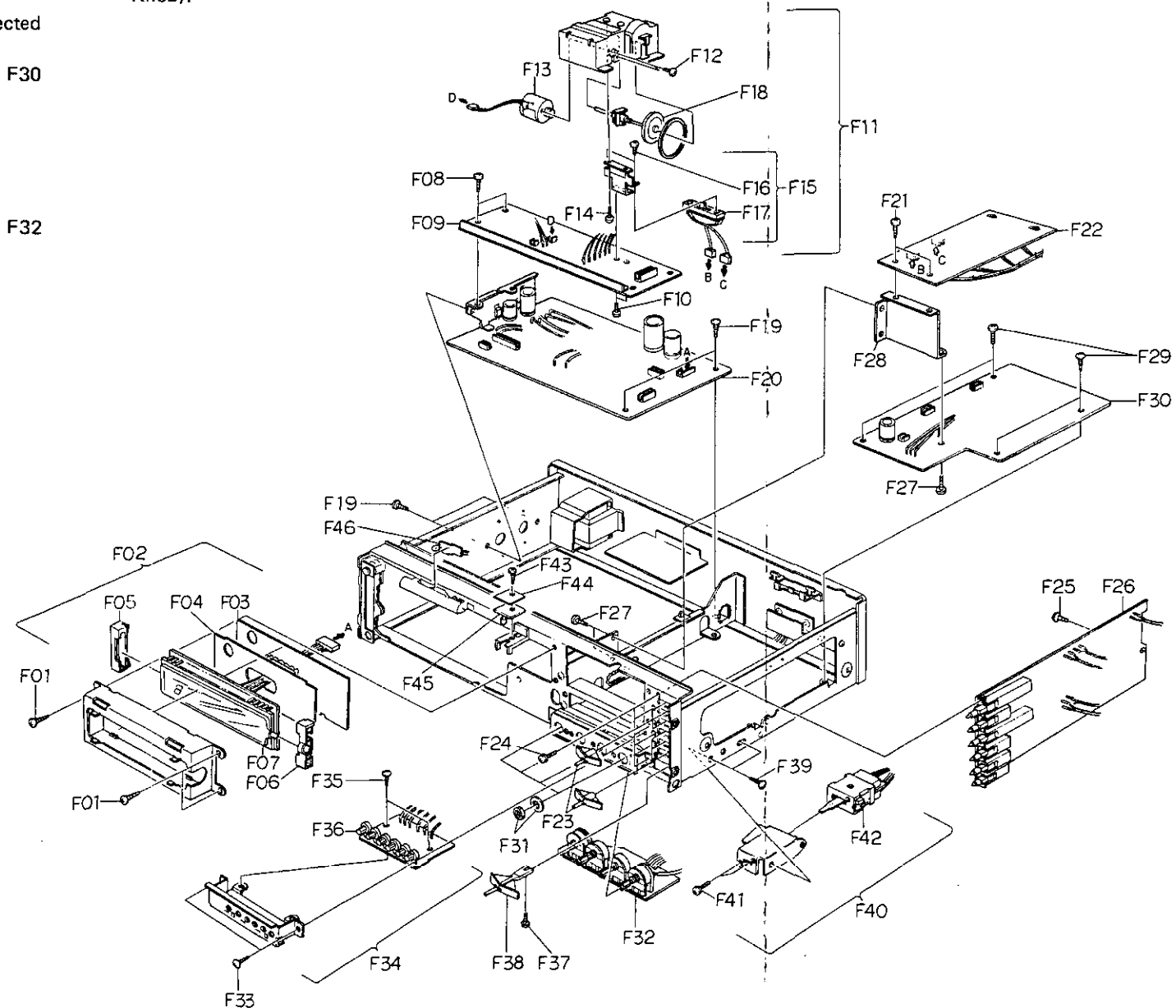


Fig. 2.3

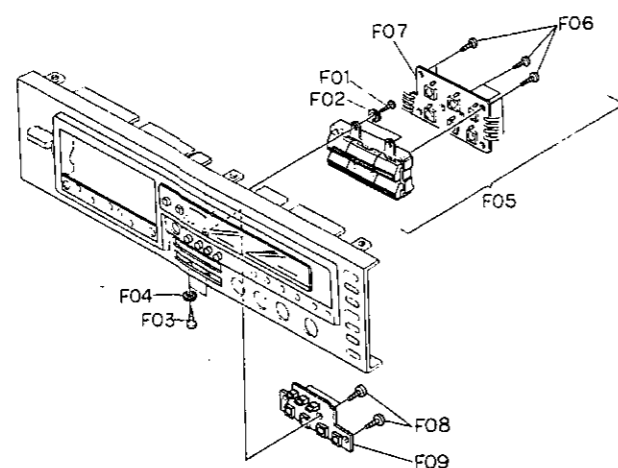


Fig. 2.4

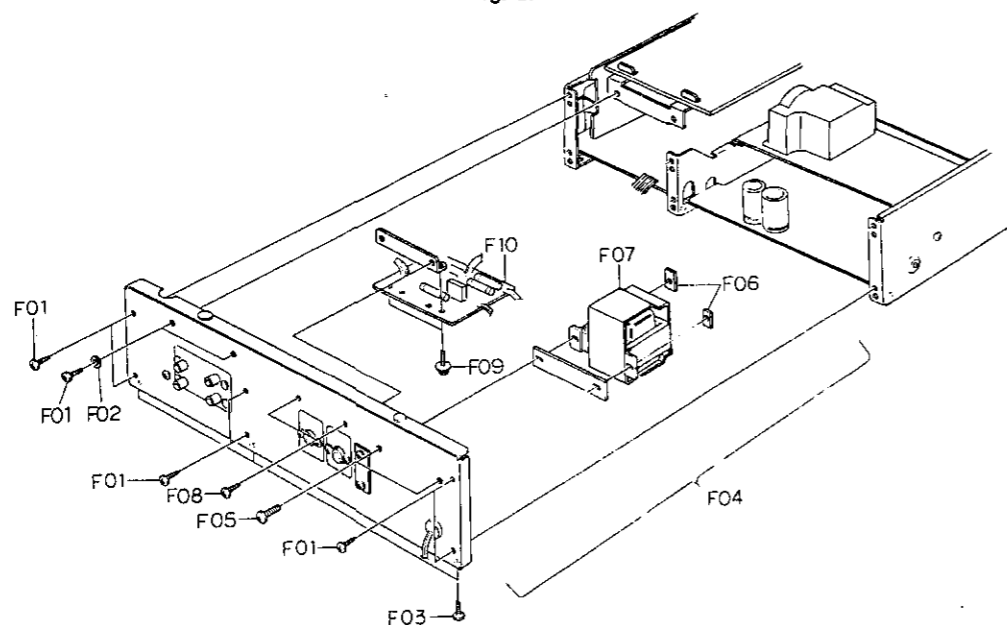


Fig. 2.5

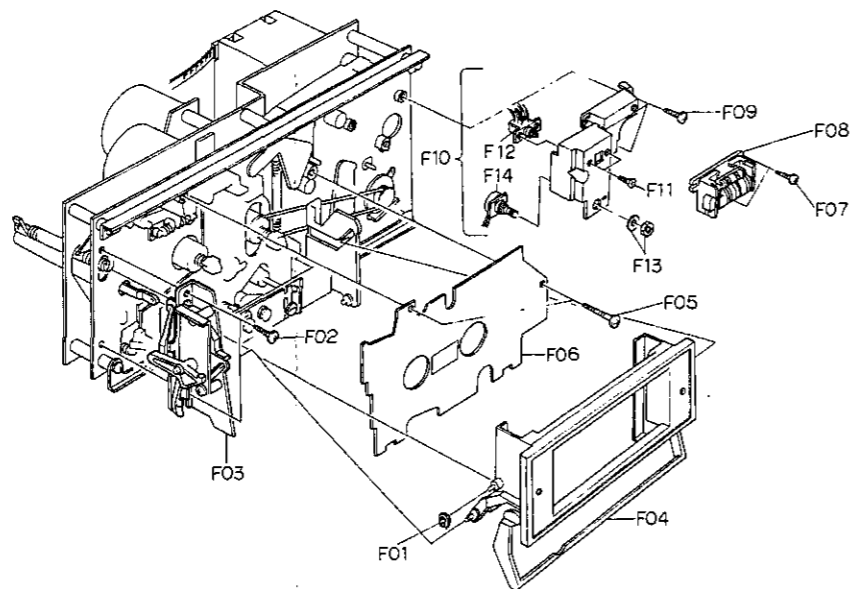


Fig. 2.6

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. 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).

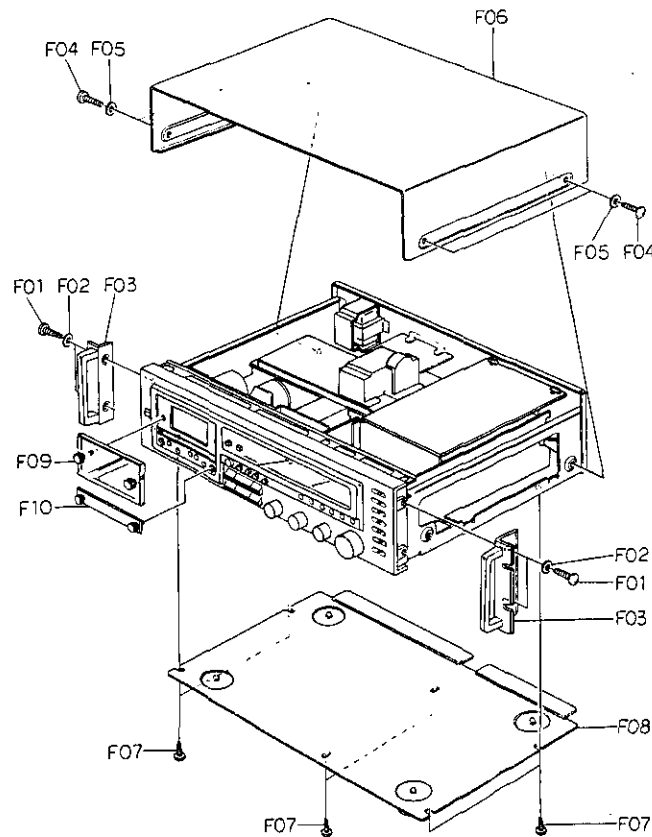


Fig. 2.1

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 kΩ) and F16 (As-

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).

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).

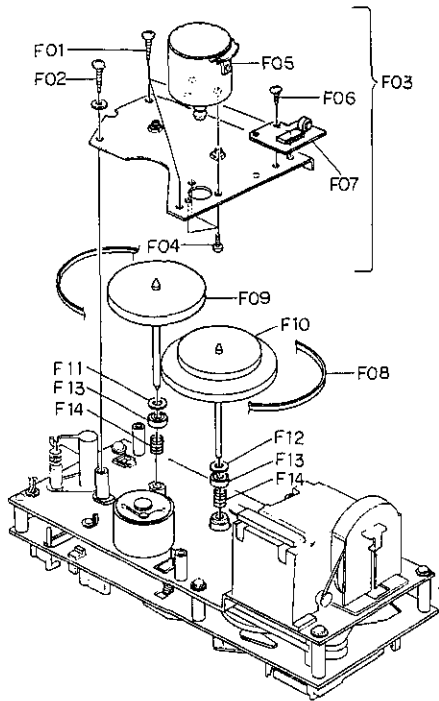


Fig. 2.7

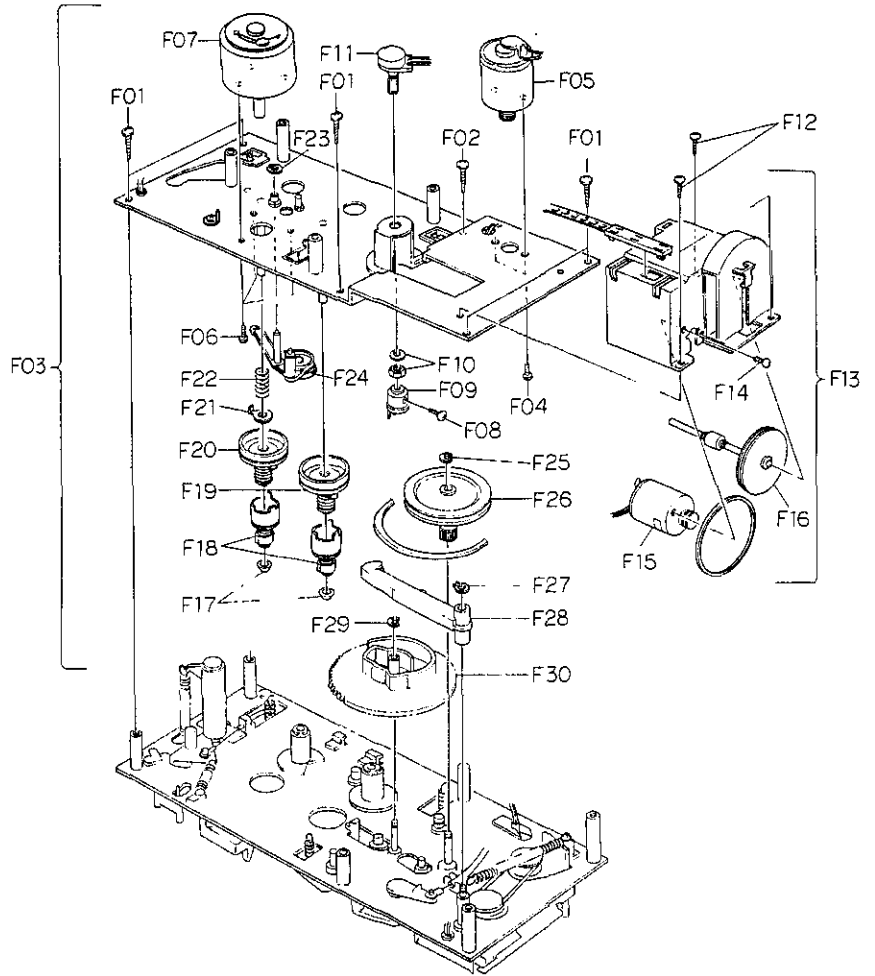


Fig. 2.8

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).

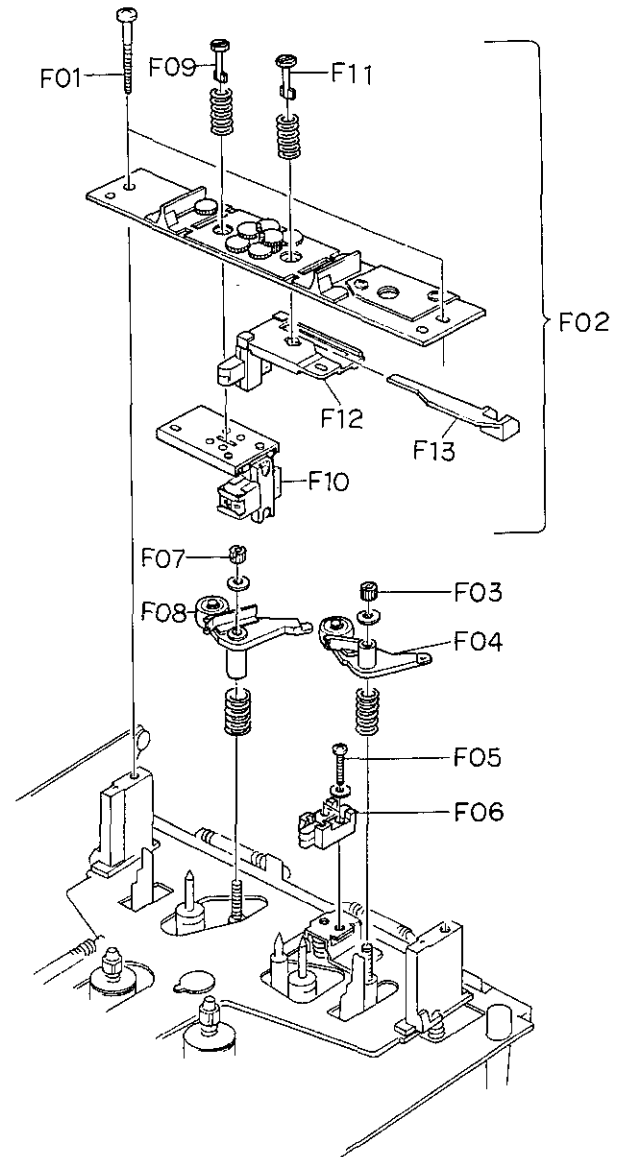


Fig. 2.9

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.

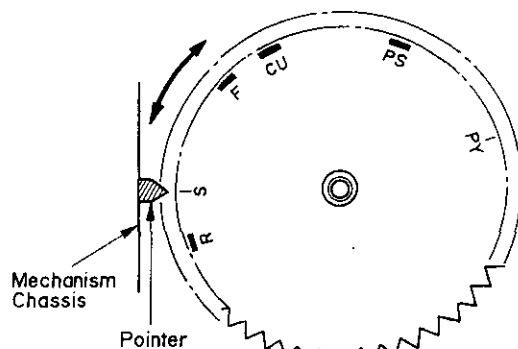


Fig. 4.1

(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.

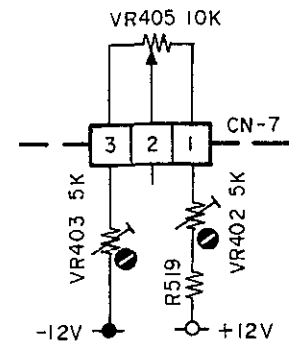


Fig. 4.2

- 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.

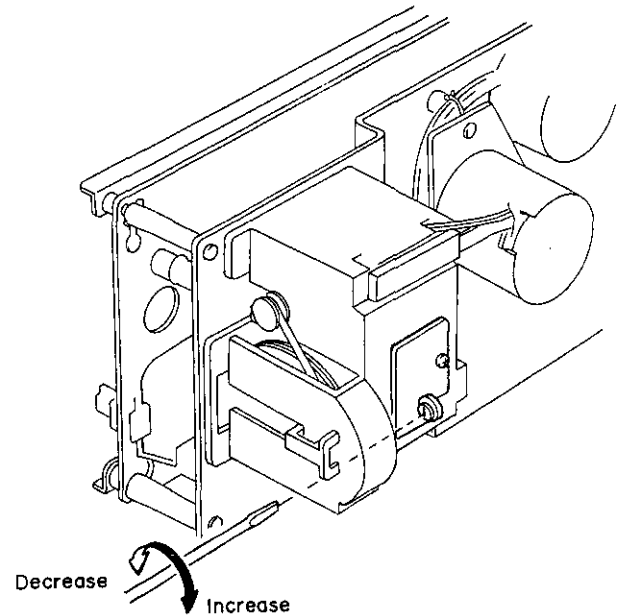


Fig. 4.3

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.

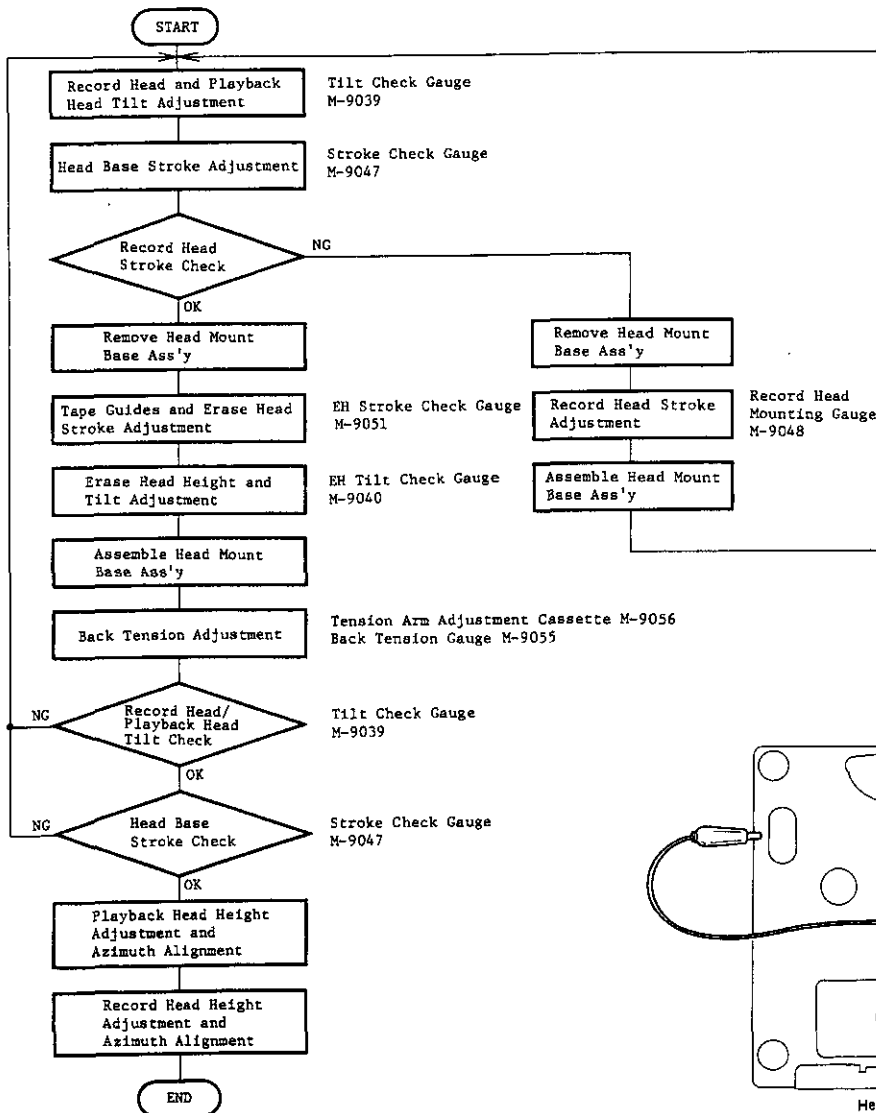


Fig. 4.4

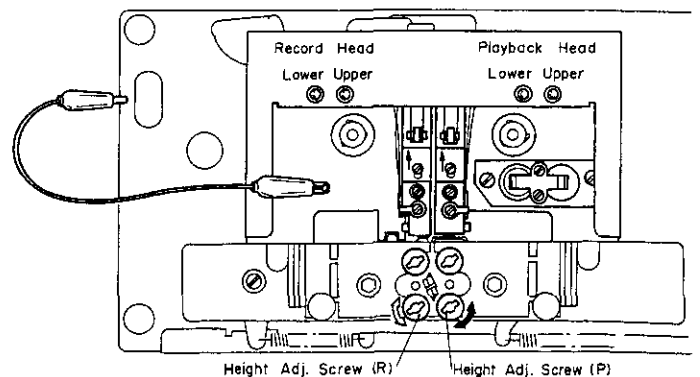


Fig. 4.5

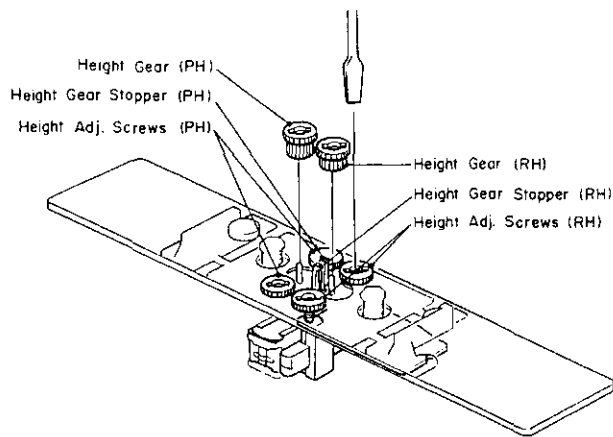


Fig. 4.6

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.

- (a) Load a Stroke Check Gauge M-9047 (DA09047B) in the N-682ZX.
- (b) Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-682ZX in Play mode. Then slowly release the Indicators and insure whether each of the Indicators is in contact with record and playback heads.
- (c) Check to insure whether the "P" pointer on the Playback Head Indicator locates between the 2 lines on the Indicator Plate.

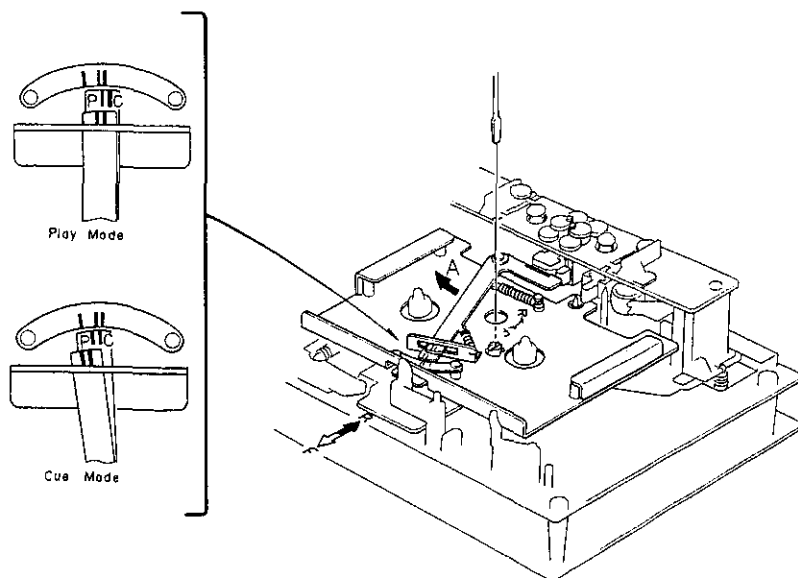


Fig. 4.7

- (d) If the playback head stroke is noted to be misaligned, adjustment can be made by moving the stroke adjuster assembled in the head base assembly (either forwardly or backwardly).
- (e) Check to insure whether the "P" pointer on the Playback Head Indicator locates between the 2 lines on the Record Head Indicator, thus check can be made on record head stroke.
- (f) If the record head stroke is noted to be misaligned, adjustment can be made with a Record Head Mounting Gauge M-9048 (DA09048A).

(2) Head Base Stroke Adjustment in Cue Mode

Refer to Figs. 4.7 and 4.8.

- (a) Load a Stroke Check Gauge M-9047 (DA09047B) in the N-682ZX.
- (b) Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the N-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.
- (c) Check to insure whether the "C" pointer on the Playback Head Indicator locates between the 2 lines on the Indicator Plate.
- (d) If the playback head stroke is noted to be misaligned, adjust VR401 on the Logic P.C.B. Ass'y till satisfactory results are obtained.
- (e) After completion of the Head Base Stroke Adjustment, check to insure accuracy of the Head Base Stroke Adjustment in Play mode. If the above are inaccurate, items (1) and (2) will have to be repeated till satisfactory results are obtained.

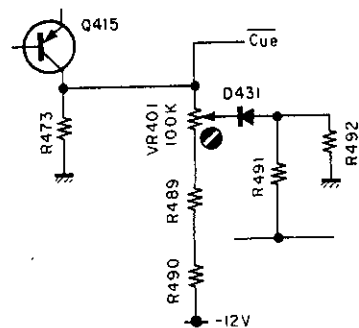


Fig. 4.8

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

- Load an EH Stroke Check Gauge M-9051 (DA0-9051A) in the N-682ZX.
- Set the N-682ZX in Play mode.
- Slide the Supply Tape Guide Check Bar down against the supply tape guide, thus check can be made on supply tape guide height.
- 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.
- 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.

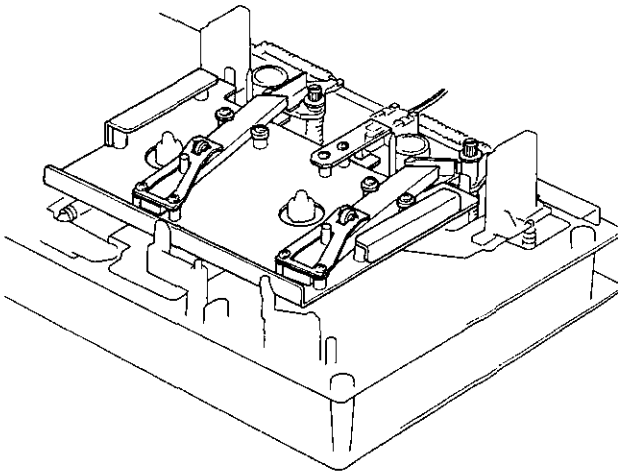


Fig. 4.9

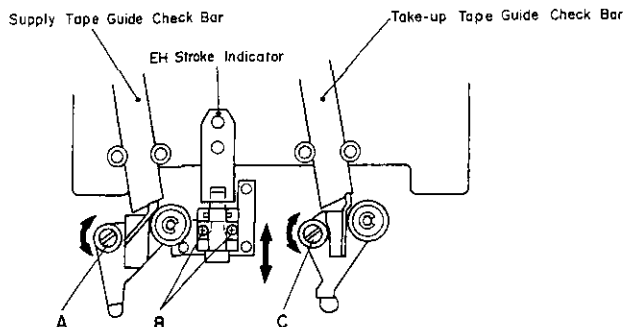


Fig. 4.10

(2) Take-up Tape Guide Height Adjustment

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

- Load an EH Stroke Check Gauge M-9051 (DA0-9051A) in the N-682ZX.
- Set the N-682ZX in Play mode, thus check can be made on erase head stroke through the EH Stroke Indicator.
- 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.
- 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.

- Remove Head Mount Base Ass'y referring to item 2.31.
- Load an EH Tilt Check Gauge M-9040 (DA09040A) in the N-682ZX.
- Set the N-682ZX in Stop mode.
- 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.
- 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.
- 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.

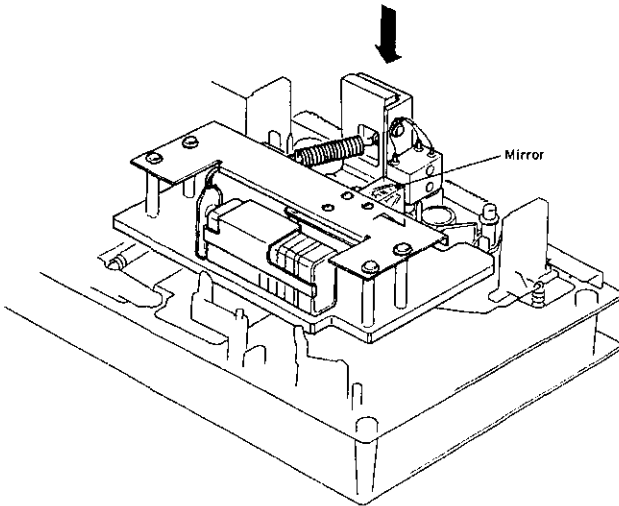


Fig. 4.11

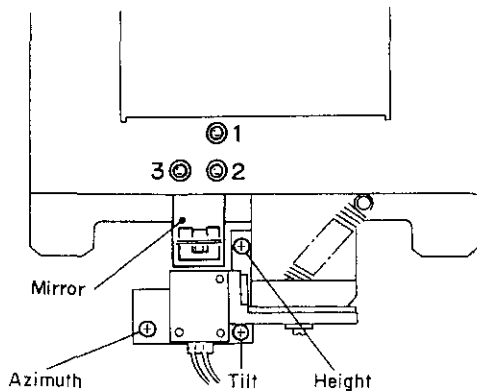


Fig. 4.12

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.

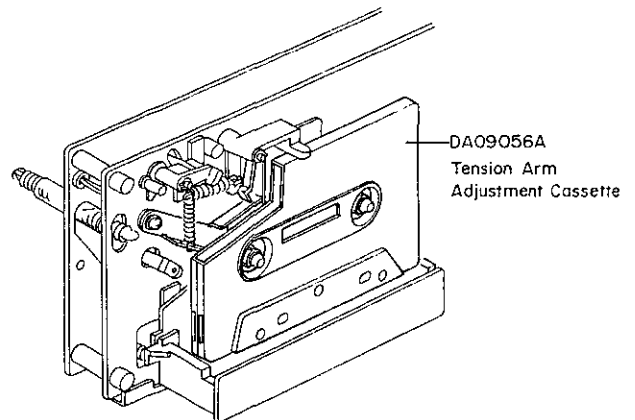


Fig. 4.13

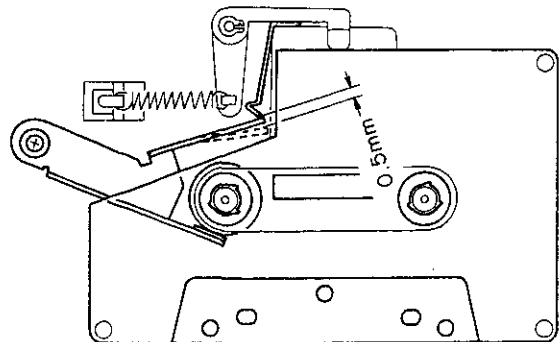


Fig. 4.14

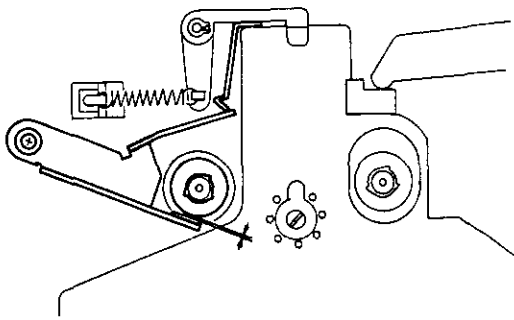


Fig. 4.15

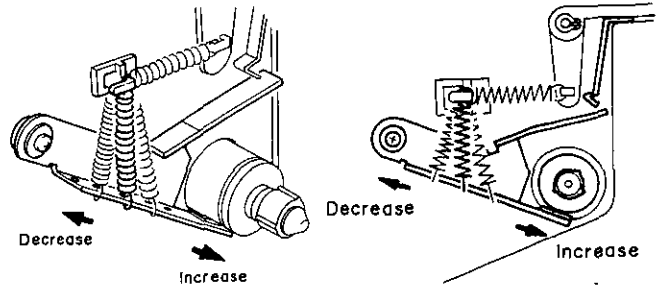


Fig. 4.16

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.

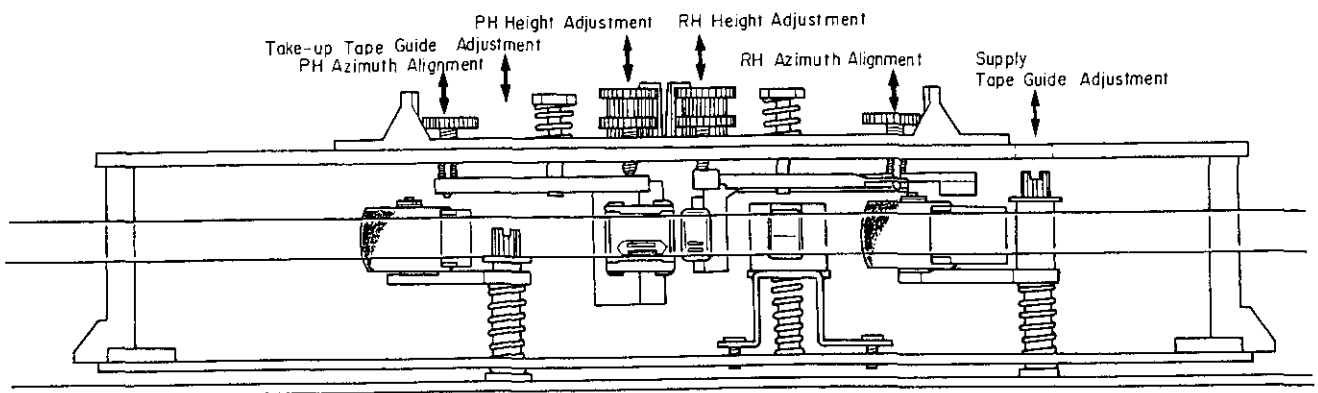


Fig. 4.17

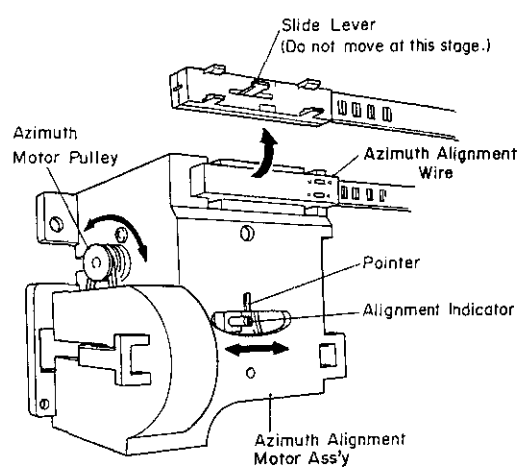


Fig. 4.18

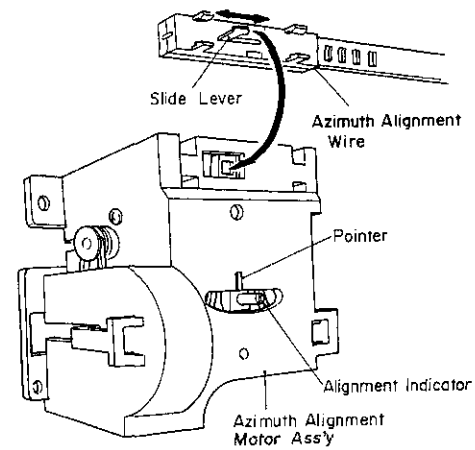


Fig. 4.19

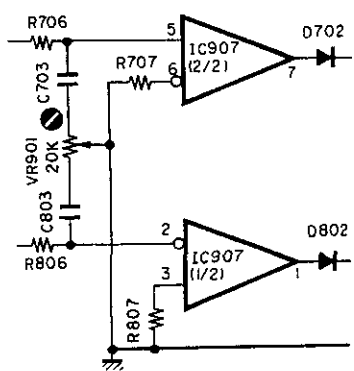


Fig. 4.20

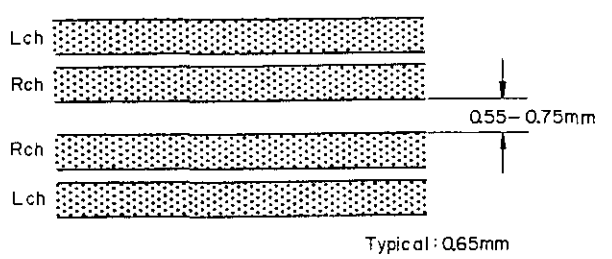


Fig. 4.21

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.

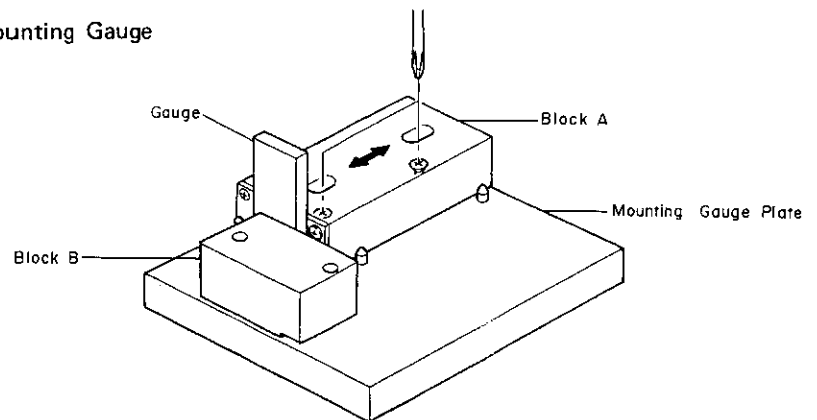
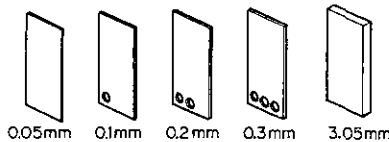


Fig. 4.22

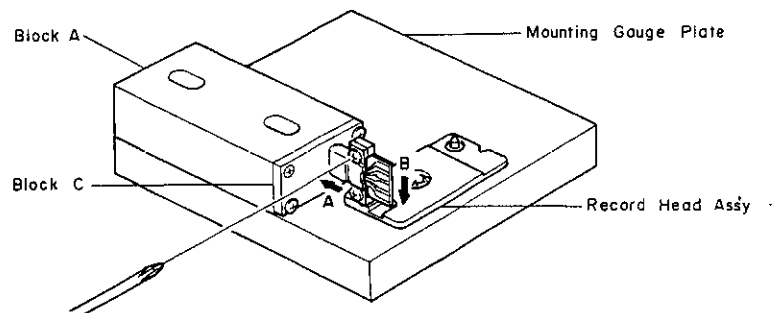


Fig. 4.23

- (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.

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 wavering 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 wavering from head surface or at pressure rollers.
- (5) If either of wavering 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 wavering 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.

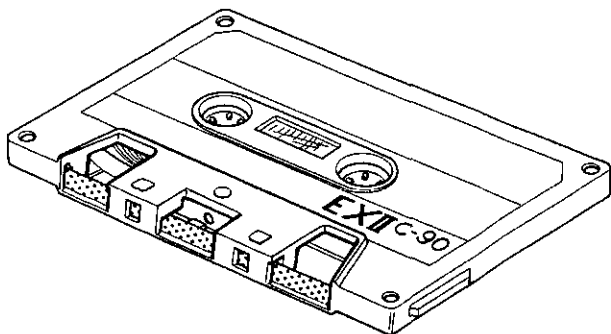


Fig. 4.24

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.

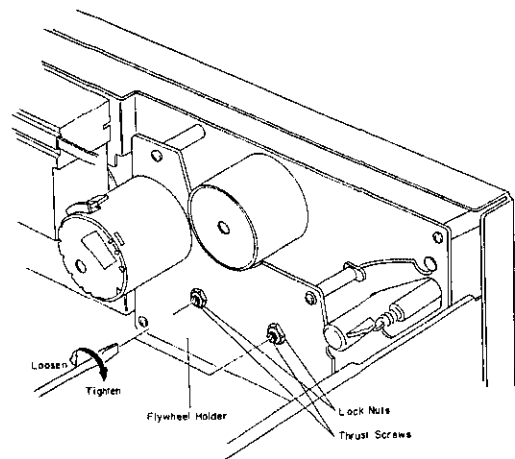


Fig. 4.25

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.

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.

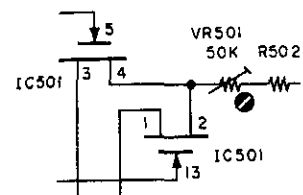


Fig. 6.1
1. Tape Speed

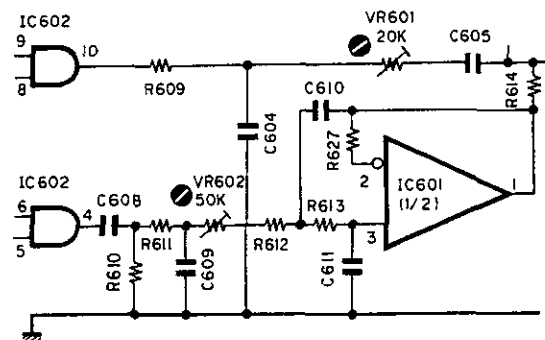


Fig. 6.2
2. Tone Level

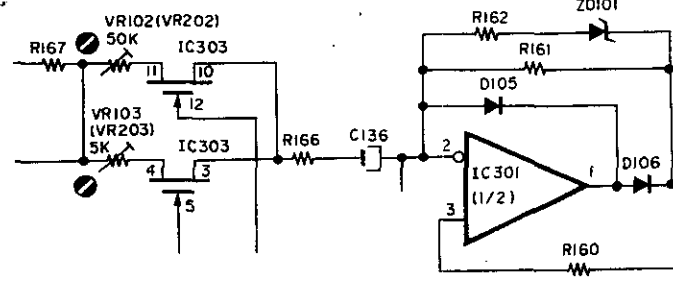


Fig. 6.3
3. FL Indicator Level

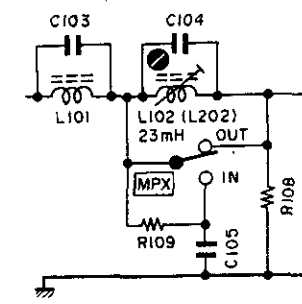


Fig. 6.4
4. MPX Filter

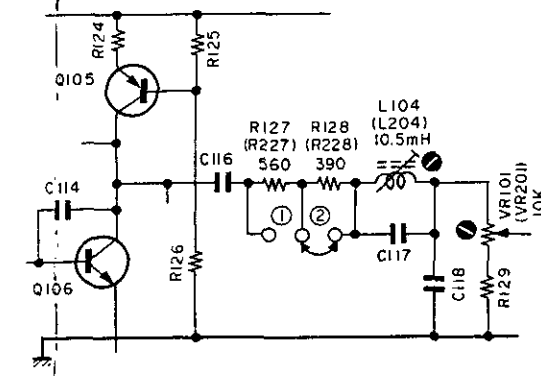


Fig. 6.5
7. Playback Level

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.

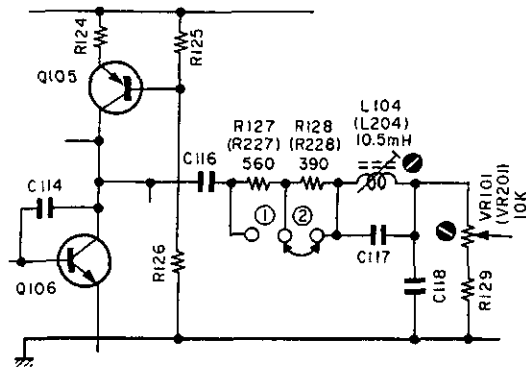


Fig. 6.6
8. Playback Frequency Response
12. Bias Trap (Playback Amp.)

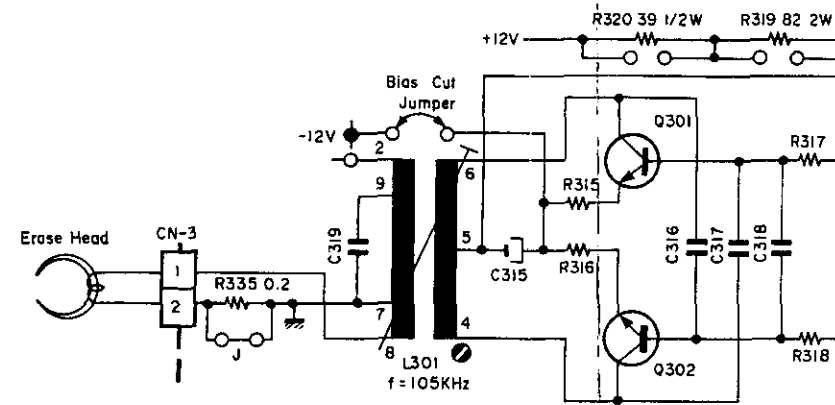


Fig. 6.7
9. Bias Oscillation Frequency and Erase Current

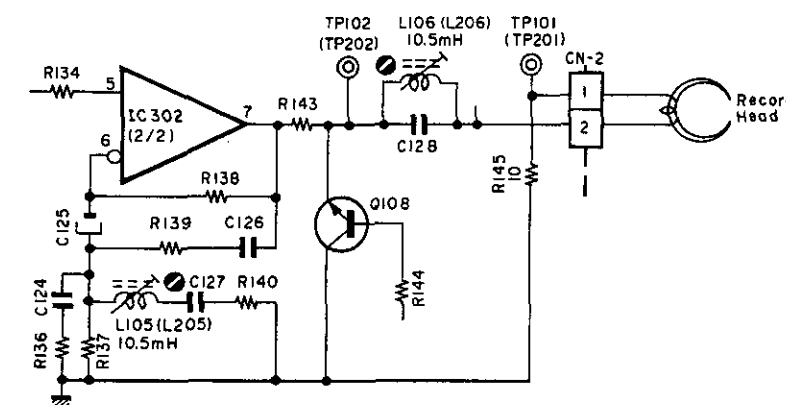


Fig. 6.8
10. Record Amp. Equalizer
11. Bias Trap (Record Amp.)

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 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.

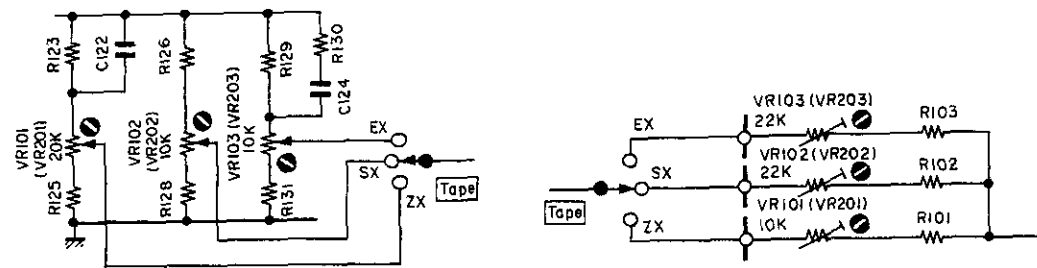


Fig. 6.9
13. Record Head Height and Azimuth

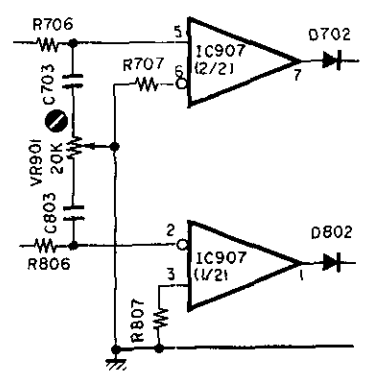


Fig. 6.10
13. Record Head Height and Azimuth

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	<p>Adjustment should be made in the order of ZX, SX and EX.</p> <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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 "Recording 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.

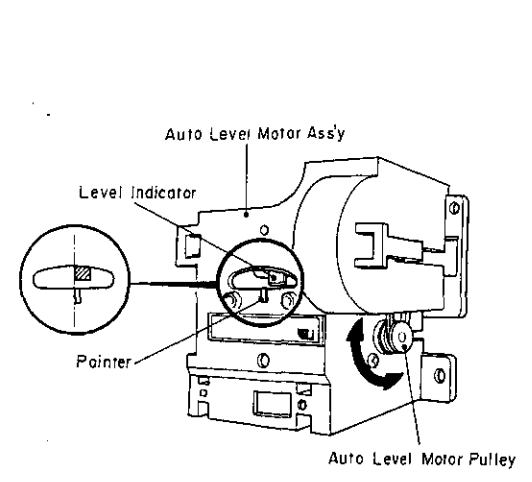


Fig. 6.11
14. Recording Level and Bias Current

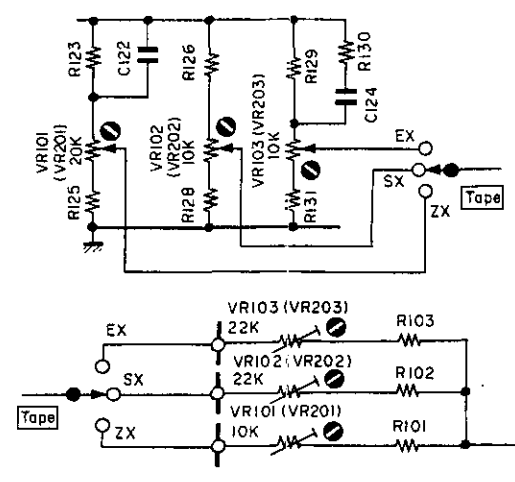
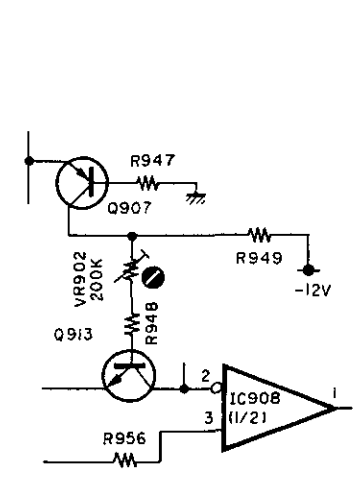


Fig. 6.12
14. Recording Level and Bias Current

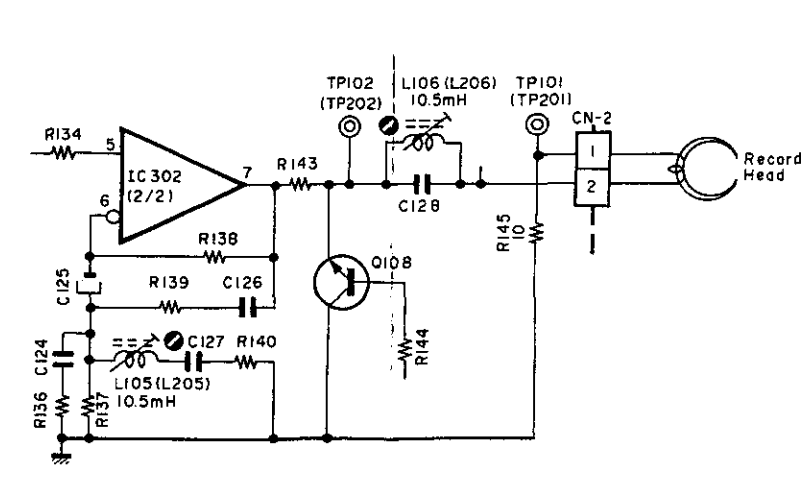


Fig. 6.13
15. Overall Frequency Response

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"> 1. Erase a reference ZX tape (DA09037A) with bulk eraser. 2. Load the tape. 3. Reset the Tape Counter to "000", then perform the Auto Calibration function referring to 15-b. 4. Adjust the Input Level controls to obtain 0 dB on the FL level indicators, and record the signals on the reference tape. 5. Rewind the tape then close the Input Level controls. 6. 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"> 1. Reset the Tape Counter to "000", then perform the Auto Calibration function referring to 15-b. 2. Set the Dolby NR switch to B-Type/C-Type. 3. Feed in 400 Hz and record, and play it back. 4. Adjust the Input Level controls to obtain 3% total harmonic distortion in playback mode. 5. Close the Input Level controls then record. 6. After reword, 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"> 1. Reset the Tape Counter to "000", then perform the Auto Calibration function referring to 15-b. 2. Adjust the Input Level controls to obtain 0 dB on the FL level indicators. 3. Record and play it back. 4. Read the distortion meter and check to insure that the distortion is less than 0.8% for ZX tape and 1.0% for SX and EXII tapes.
21	Wow/Flutter Measurement	3 kHz Speed and Wow/Flutter Tape (DA09006A)	Wow/Flutter Meter to Output Jacks	Playback Monitor SW — Tape Eq. SW — 70 μ s		Play back and read the wow/flutter meter.

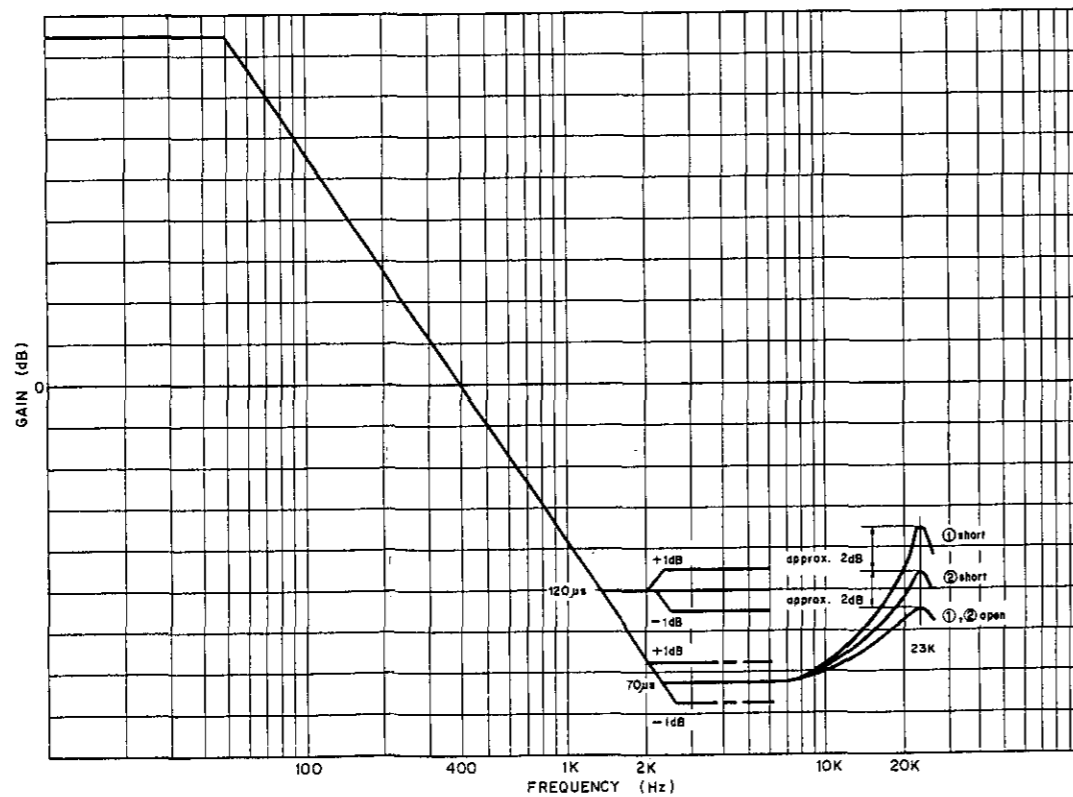


Fig. 6.14 Playback Equalization Curve

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.

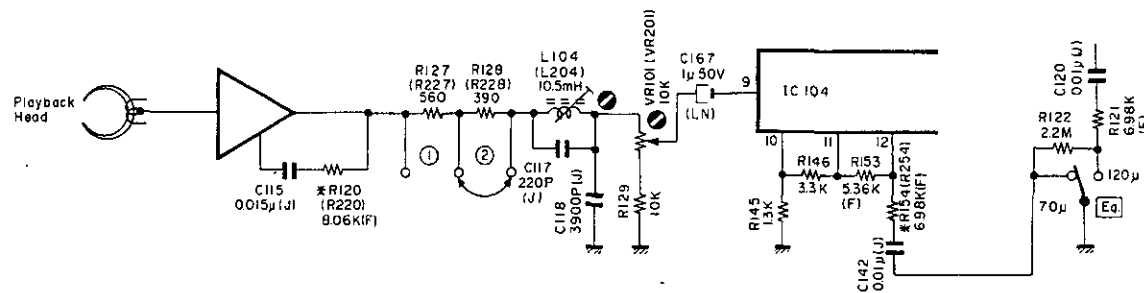


Fig. 6.15 Playback Eq. Amp.

(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.

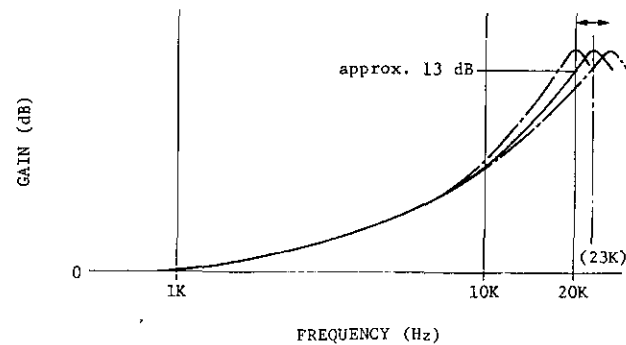


Fig. 6.16

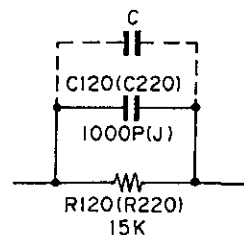


Fig. 6.17

6.3. Dolby NR Circuit Check

Dolby NR circuit incorporates a Dolby NR IC ($\mu A7300$ -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

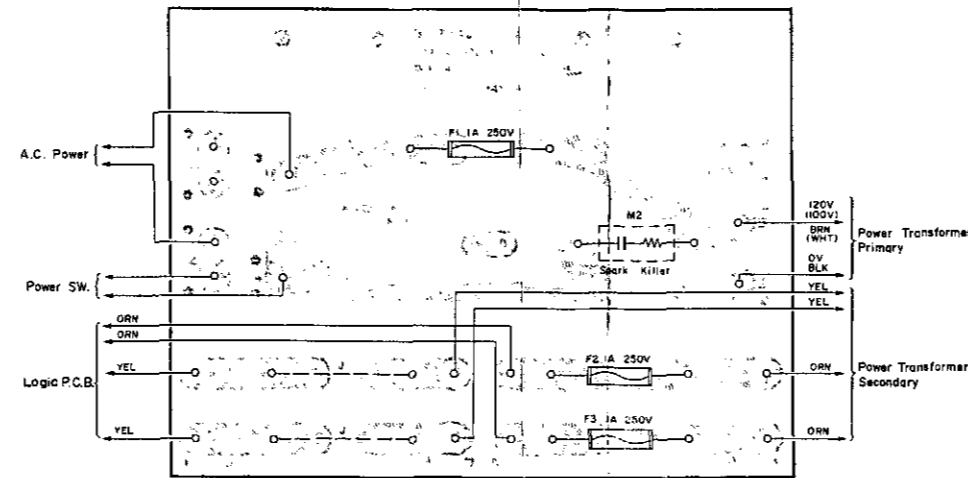


Fig. 7.1.1 U.S.A., Canada & Japan

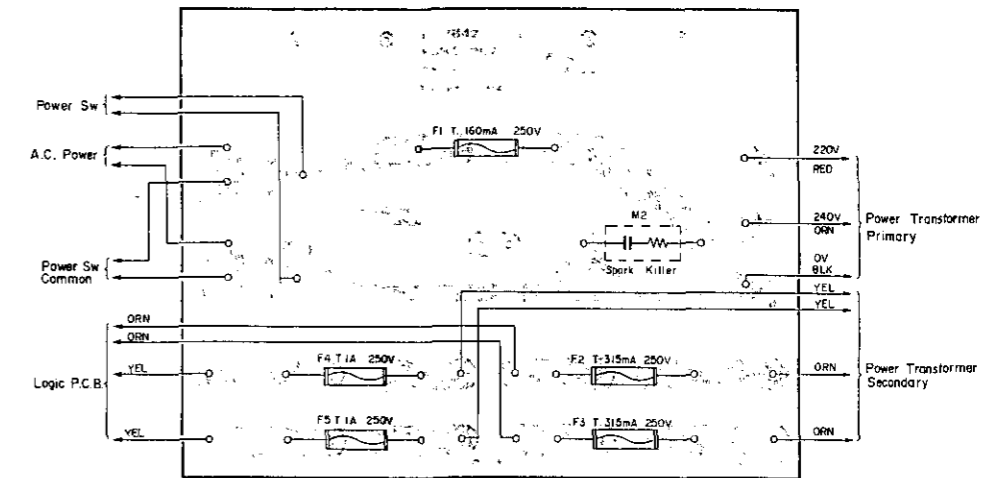


Fig. 7.1.3 UK & Australia

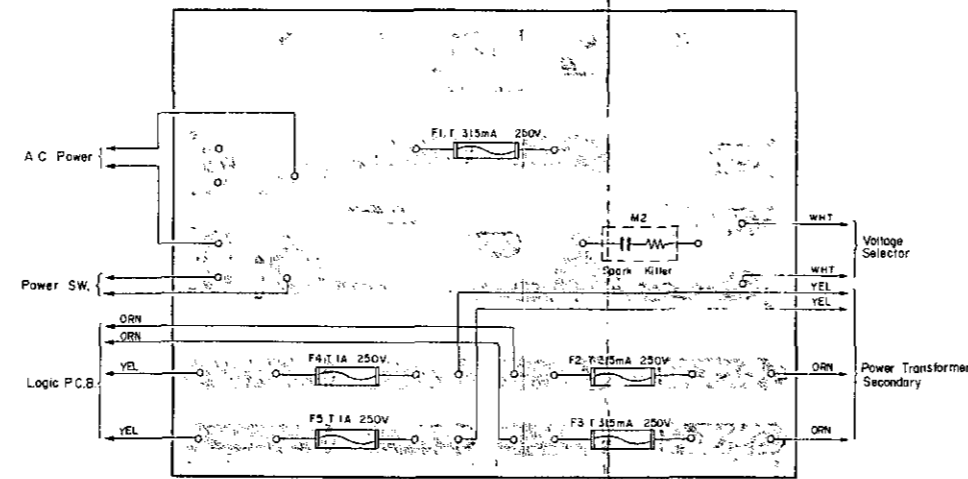


Fig. 7.1.2 Others

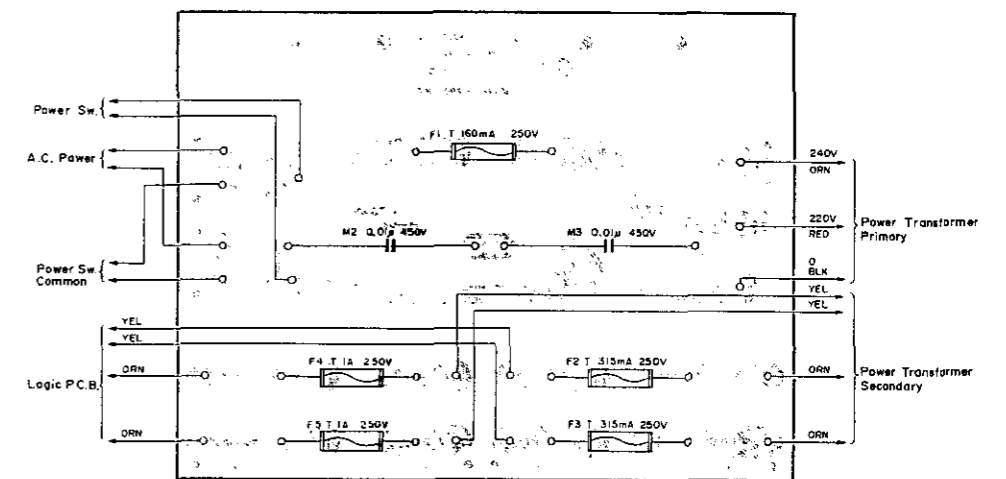


Fig. 7.1.4 220V Class 2

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

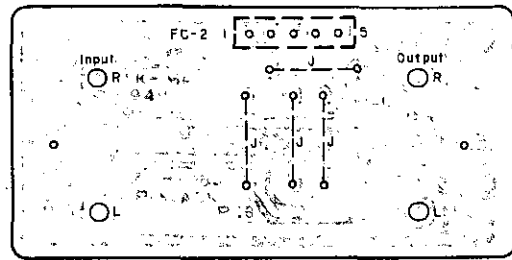


Fig. 7.2

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

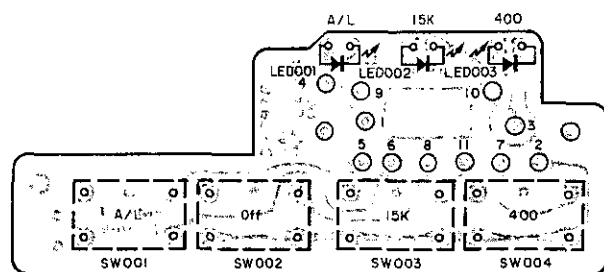


Fig. 7.4

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

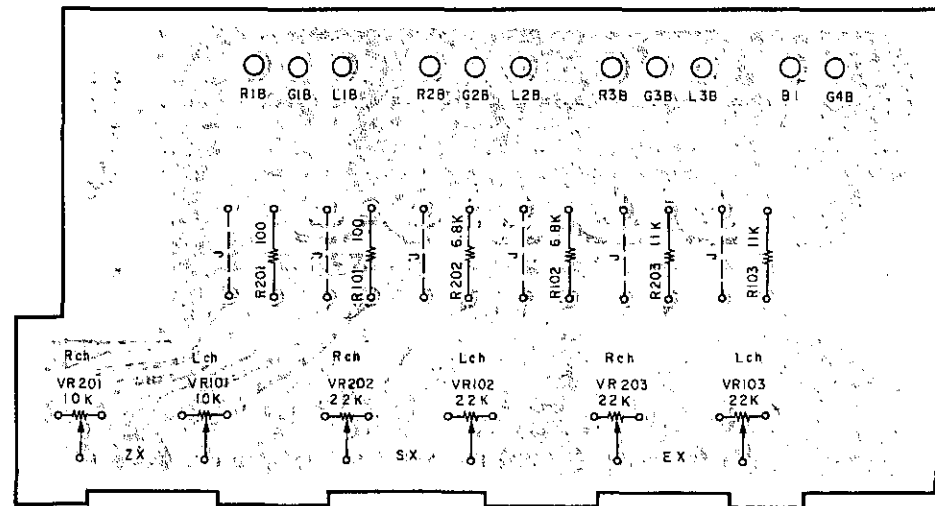


Fig. 7.5

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

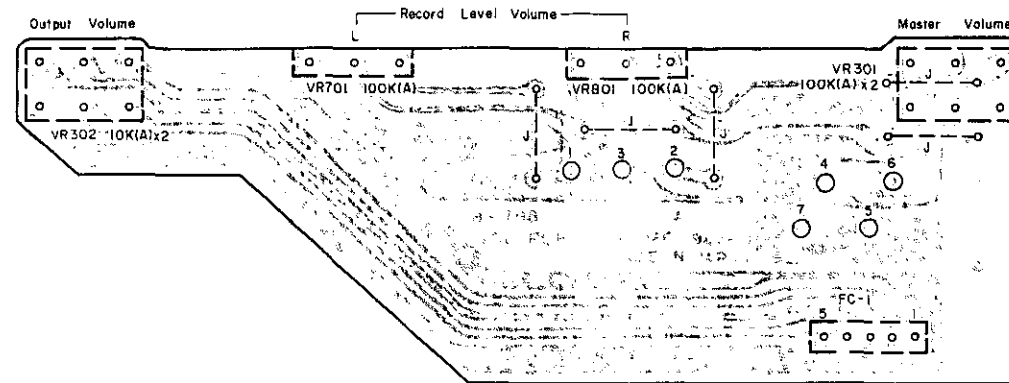


Fig. 7.3

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

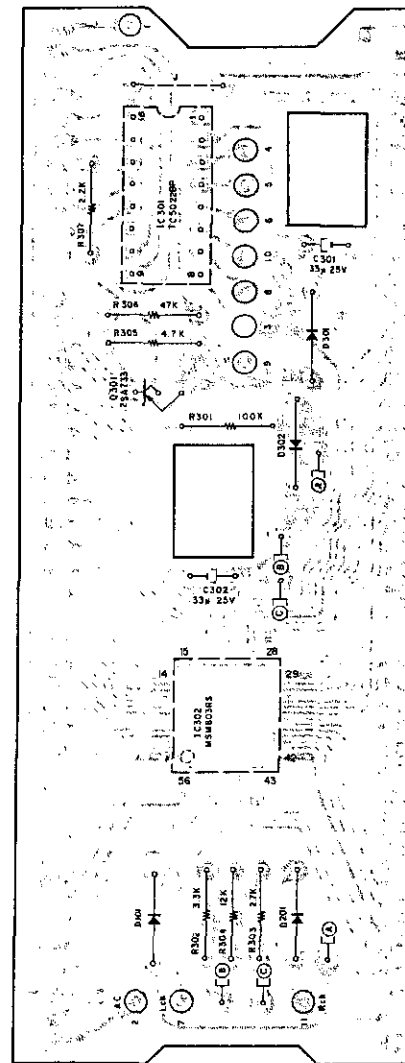


Fig. 7.6 Note: Diode is 1SS53 unless otherwise specified.

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

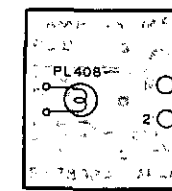


Fig. 7.7

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
	0B07983A	Pin Jack P.C.B.
	0B05238A	5P Flat Cable
	0B08709A	Jack Unit (1 pce.)
	0E00037A	Earth Lug B-5 (1 pce.)
VR301 VR302 VR701,801 FC1	BA04469A	Volume P.C.B. Ass'y
	0B07982A	Volume P.C.B.
	0B07203A	Volume 100K (A) x 2
	0B07204A	Volume 10K (A) x 2
	0B07202A	Volume 100K (A)
0B05238A	5P Flat Cable	
LED001, 002,003 CN9	BA04466A	Calibration Indicator P.C.B. Ass'y
	0B07976B	Calibration Indicator P.C.B.
	0B06306A	LED
VR101,201 VR102,103 202,203 R101,201 R102,202 R103,203	BA04468A	Bias Cal. P.C.B. Ass'y
	0B07981A	Bias Cal. P.C.B.
	0B07319A	Semi-fixed Volume 10K
0B07276A	Semi-fixed Volume 22K	
0B01679A	Carbon Resistor 100 ERD-25T J	
0B01682A	Carbon Resistor 6.8K ERD-25T J	
0B09334A	Carbon Resistor 11K ERD-25T J	
IC301 IC302 Q301 D101,201 301,302 R301 R302 R303 R304 R305 R306 R307 C301,302 CN8	BA04459A	FL Indicator P.C.B. Ass'y
	0B07988A	FL Indicator P.C.B.
	0B06211A	IC TC5022BP
	0B06305A	IC MSM803RS
	0B06013A	Transistor 2SA733
	0B06181A	Silicon Diode 1SS53
	0B01889A	Carbon Resistor 100K ERD-25T J
	0B01681A	Carbon Resistor 3.3K ERD-25T J
	0B05629A	Carbon Resistor 2.7K ERD-25T J
	0B09263A	Carbon Resistor 12K ERD-25T J
	0B01846A	Carbon Resistor 4.7K ERD-25T J
0B05641A	Carbon Resistor 47K ERD-25T J	
0B05622A	Carbon Resistor 2.2K ERD-25T J	
0B09251A	Electrolytic Capacitor 33μ 25V	
0B08893A	11P-H Connector B	
0B08894A	FL Indicator FIP38AW13YS (1 pce.)	
0J04415A	Free Bushing 70mm (1 pce.)	
PL408	BA04062A	Lamp P.C.B. B Ass'y
	0B07838A	Lamp P.C.B. B
0B08586A	Lamp 12V 60mA	
PL409	BA04063A	Lamp P.C.B. C Ass'y
	0B07840A	Lamp P.C.B. C
0B08586A	Lamp 12V 60mA	

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

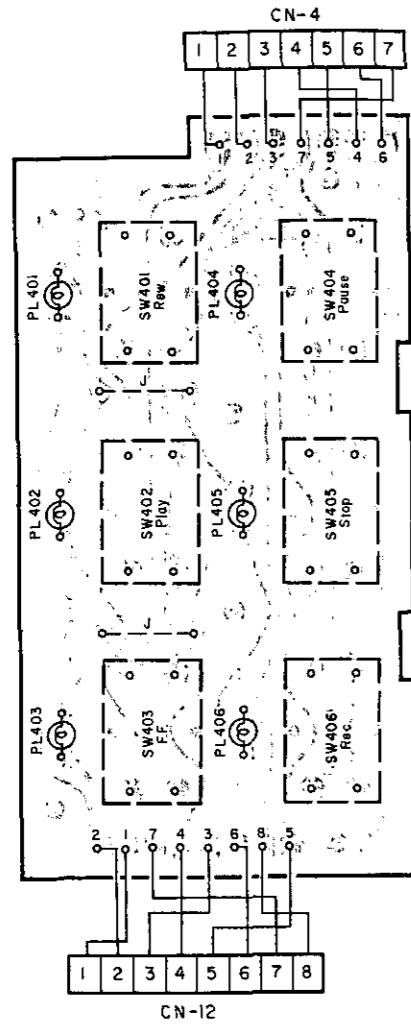


Fig. 7.9

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

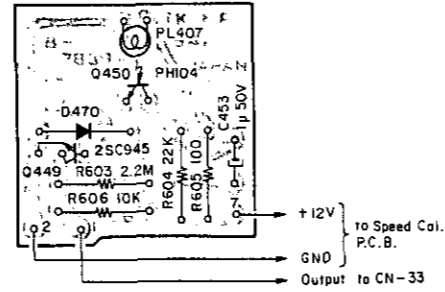


Fig. 7.10

Note: Diode is 1SS53 unless otherwise specified.

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

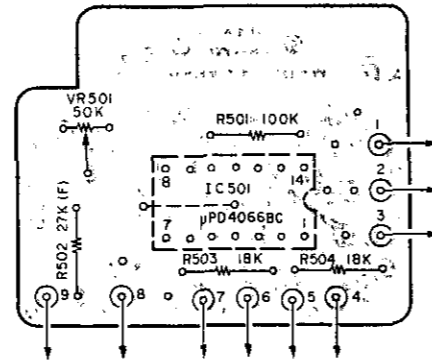


Fig. 7.11

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

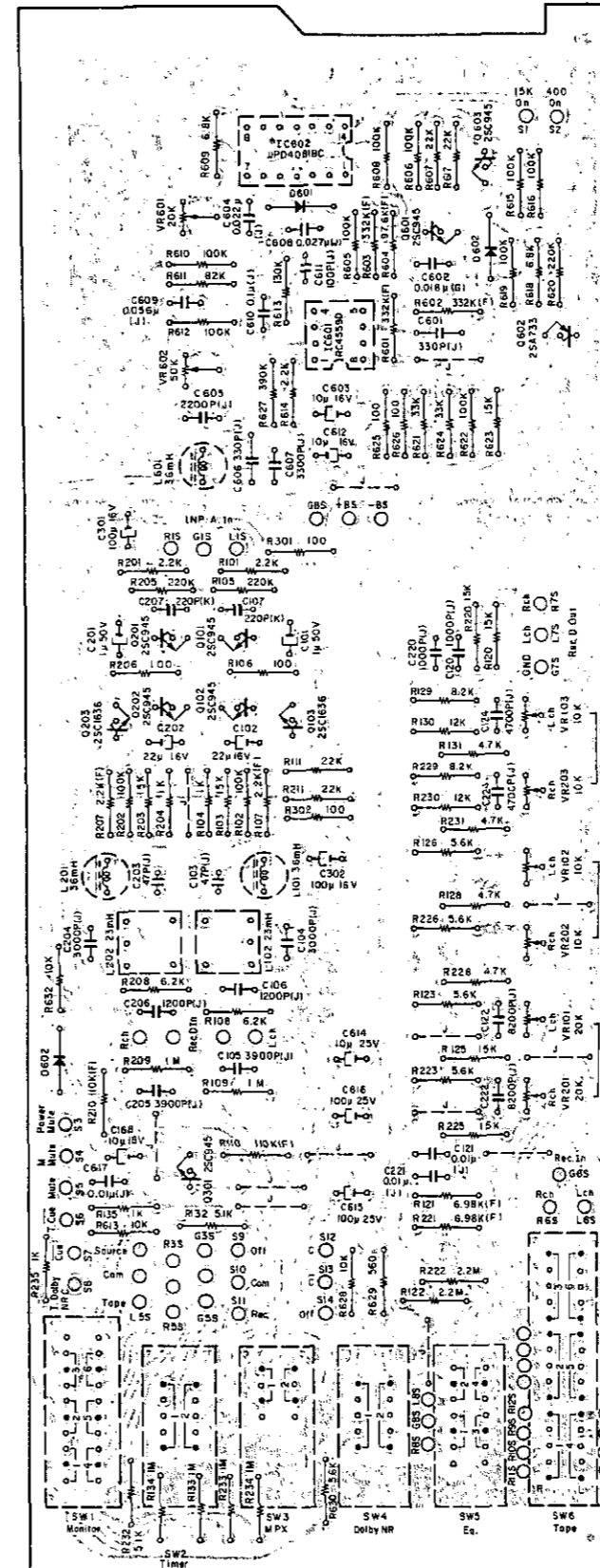


Fig. 7.12.1 Serial No.: A12202862 -

Note: Diode is 1SS53 unless otherwise specified.

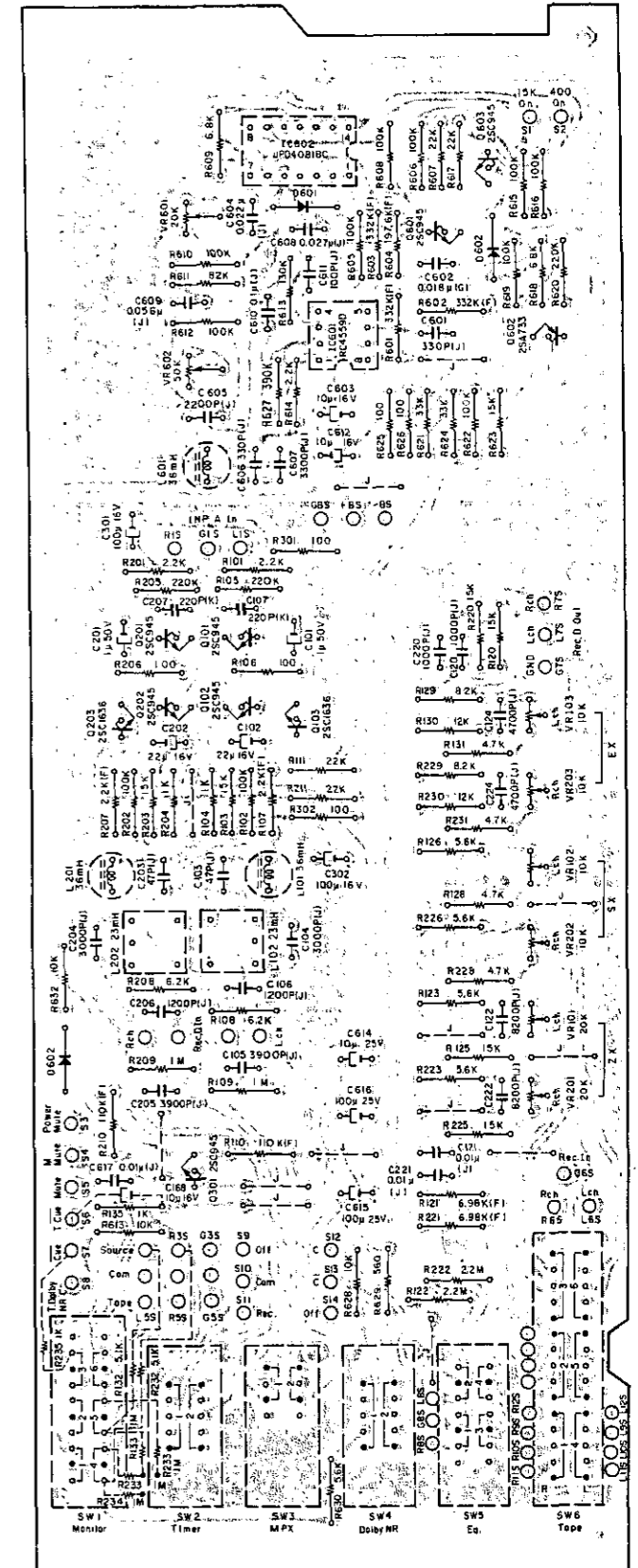


Fig. 7.12.2 Serial Nos.: A12201001 - A12202861

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.	IC501	0B07893B	Speed Cal. P.C.B.
PL401-406	0B07219A	Semi-Switch (6 pcs.)	VR501	0B06144A	IC μPD4066BC
CN4	0B08631B	Lamp 12V 25mA (6 pcs.)	R501	0B01889A	Carbon Resistor 100K ERD-25T J
CN12	0B08630B	7P-H Connector A Ass'y	R502	0B09444A	Metal Film Resistor 27K SN14K2E F
	BA04070A	Shut-off P.C.B. Ass'y	R503,504	0B05560A	Carbon Resistor 18K ERD-25T J
Q449	0B07839A	Shut-off P.C.B.			
Q450	0B01872A	Transistor 2SC945 (L)			
D470	0B06228A	Photo Transistor PH104			
R603	0B05671A	Silicon Diode 1SS53			
R604	0B05671A	Carbon Resistor 2.2M ERD-25T J			
R605	0B05615A	Carbon Resistor 22K ERD-25T J			
R606	0B09215A	Fail Safe Type Resistor 100 RDF-25S J			
C453	0B01888A	Carbon Resistor 10K ERD-25T J			
PL407	0B01405A	Electrolytic Capacitor 1μ 50V			
	0B08552A	Lamp 12V 25mA			

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04461A	Switch P.C.B. Ass'y Serial No.: A12202862 —					BA04461A	Switch P.C.B. Ass'y Serial Nos.: A12201001 — A12202861			
	— Osc. —						— Osc. —				
IC601	0B06127A	IC RC4559D	C101,201	0B01405A	Electrolytic Capacitor 1μ 50V	IC601	0B06127A	IC RC4559D	C101,201	0B01405A	Electrolytic Capacitor 1μ 50V
IC602	0B06219A	IC μPD4081BC	C102,202	0B01862A	Electrolytic Capacitor 22μ 16V	IC602	0B06219A	IC μPD4081BC	C102,202	0B01862A	Electrolytic Capacitor 22μ 16V
Q601,603	0B06100A	Transistor 2SC945 (A)	C103,203	0B09242A	Mica Capacitor 47P 50V J	Q601,603	0B06100A	Transistor 2SC945 (A)	C103,203	0B09242A	Mica Capacitor 47P 50V J
Q602	0B06013A	Transistor 2SA733	C104,204	0B09262A	PP Capacitor 3000P 100V J	Q602	0B06013A	Transistor 2SA733	C104,204	0B09262A	PP Capacitor 3000P 100V J
D601,602	0B06181A	Silicon Diode 1SS53	C105,205	0B01804A	Mylar Capacitor 3900P 50V J	D601,602	0B06181A	Silicon Diode 1SS53	C105,205	0B01804A	Mylar Capacitor 3900P 50V J
L601	0B03919B	Inductor 36mH	C106,206	0B05687A	Mylar Capacitor 1200P 50V J	L601	0B03919B	Inductor 36mH	C106,206	0B05687A	Mylar Capacitor 1200P 50V J
VR601	0B07270A	Semi-fixed Volume 20K	C107,207	0B09283A	Ceramic Capacitor 220P 50V K	VR601	0B07270A	Semi-fixed Volume 20K	C107,207	0B09283A	Ceramic Capacitor 220P 50V K
VR602	0B07269A	Semi-fixed Volume 50K	C301,302	0B01400A	Electrolytic Capacitor 100μ 16V	VR602	0B07269A	Semi-fixed Volume 50K	C301,302	0B01400A	Electrolytic Capacitor 100μ 16V
R601,602	0B09315A	Metal Film Resistor 332K SN14K2E F				R601,602	0B09315A	Metal Film Resistor 332K SN14K2E F			
R603						R603					
R604	0B09583A	Metal Film Resistor 97.6K SN14K2E F				R604	0B09583A	Metal Film Resistor 97.6K SN14K2E F			
R605,606	0B01889A	Carbon Resistor 100K ERD-25T J				R605,606	0B01889A	Carbon Resistor 100K ERD-25T J			
608,610						608,610					
612,615						612,615					
616,619						616,619					
622						622					
R607,617	0B05615A	Carbon Resistor 22K ERD-25T J				R607,617	0B05615A	Carbon Resistor 22K ERD-25T J			
R609,618	0B01682A	Carbon Resistor 6.8K ERD-25T J				R609,618	0B01682A	Carbon Resistor 6.8K ERD-25T J			
R611	0B05668A	Carbon Resistor 82K ERD-25T J				R611	0B05668A	Carbon Resistor 82K ERD-25T J			
R613	0B09527A	Carbon Resistor 130K ERD-25T J				R613	0B09527A	Carbon Resistor 130K ERD-25T J			
R614	0B05622A	Carbon Resistor 2.2K ERD-25T J				R614	0B05622A	Carbon Resistor 2.2K ERD-25T J			
R620	0B05625A	Carbon Resistor 220K ERD-25T J				R620	0B05625A	Carbon Resistor 220K ERD-25T J			
R621,624	0B05509A	Carbon Resistor 33K ERD-25T J				R621,624	0B05509A	Carbon Resistor 33K ERD-25T J			
R623	0B01683A	Carbon Resistor 15K ERD-25T J				R623	0B01683A	Carbon Resistor 15K ERD-25T J			
R625,626	0B09215A	Fail Safe Type Resistor 100 RDF-25S J				R625,626	0B09215A	Fail Safe Type Resistor 100 RDF-25S J			
R627	0B05676A	Carbon Resistor 390K ERD-25T J				R627	0B05676A	Carbon Resistor 390K ERD-25T J			
C601,606	0B09545A	Mica Capacitor 330P 50V J				C601,606	0B09545A	Mica Capacitor 330P 50V J			
C602	0B09584A	PP Capacitor 0.018μ 100V G				C602	0B09584A	PP Capacitor 0.018μ 100V G			
C603,612	0B01412A	Electrolytic Capacitor 10μ 16V				C603,612	0B01412A	Electrolytic Capacitor 10μ 16V			
C604	0B05622A	Mylar Capacitor 0.022μ 50V J				C604	0B05622A	Mylar Capacitor 0.022μ 50V J			
C605	0B01802A	Mylar Capacitor 2200P 50V J				C605	0B01802A	Mylar Capacitor 2200P 50V J			
C607	0B01914A	Mylar Capacitor 3300P 50V J				C607	0B01914A	Mylar Capacitor 3300P 50V J			
C608	0B09045A	Mylar Capacitor 0.027μ 50V J				C608	0B09045A	Mylar Capacitor 0.027μ 50V J			
C609	0B05813A	Mylar Capacitor 0.056μ 50V J				C609	0B05813A	Mylar Capacitor 0.056μ 50V J			
C610	0B01780A	Mylar Capacitor 0.1μ 50V J				C610	0B01780A	Mylar Capacitor 0.1μ 50V J			
C611	0B09302A	Mica Capacitor 100P 100V J				C611	0B09302A	Mica Capacitor 100P 100V J			
	— Input Amp. —						— Input Amp. —				
Q101,102	0B06100A	Transistor 2SC945 (A)	D602	0B06181A	Silicon Diode 1SS53	Q101,102	0B06100A	Transistor 2SC945 (A)	D602	0B06181A	Silicon Diode 1SS53
201,202			R132,232	0B09314A	Carbon Resistor 5.1K ERD-25T J	201,202			R132,232	0B09314A	Carbon Resistor 5.1K ERD-25T J
301			R133,134	0B09749A	Carbon Resistor 1M ERD-16T J	301			R133,134	0B09749A	Carbon Resistor 1M ERD-16T J
Q103,203	0B06070A	Transistor 2SC1636	R135,235	0B01857A	Carbon Resistor 1K ERD-25T J	Q103,203	0B06070A	Transistor 2SC1636	R135,235	0B01857A	Carbon Resistor 1K ERD-25T J
L101,201	0B03919B	Inductor 36mH	R628,631	0B01888A	Carbon Resistor 10K ERD-25T J	L101,201	0B03919B	Inductor 36mH	R628,631	0B01888A	Carbon Resistor 10K ERD-25T J
L102,202	0B03563A	19 kHz Coil 23mH	632	0B05575A	Carbon Resistor 560 ERD-25T J	L102,202	0B03563A	19 kHz Coil 23mH	632	0B05575A	Carbon Resistor 560 ERD-25T J
R101,201	0B05622A	Carbon Resistor 2.2K ERD-25T J	R629	0B01887A	Carbon Resistor 5.6K ERD-25T J	R101,201	0B05622A	Carbon Resistor 2.2K ERD-25T J	R629	0B01887A	Carbon Resistor 5.6K ERD-25T J
R102,202	0B01889A	Carbon Resistor 100K ERD-25T J	R630	0B01674A	Electrolytic Capacitor 10μ 25V	R102,202	0B01889A	Carbon Resistor 100K ERD-25T J	R630	0B01674A	Electrolytic Capacitor 10μ 25V
R103,203	0B01683A	Carbon Resistor 15K ERD-25T J	C614	0B01272A	Electrolytic Capacitor 100μ 25V	R103,203	0B01683A	Carbon Resistor 15K ERD-25T J	C614	0B01272A	Electrolytic Capacitor 100μ 25V
R104,204	0B01857A	Carbon Resistor 1K ERD-25T J	C617	0B05681A	Mylar Capacitor 0.01μ 50V J	R104,204	0B01857A	Carbon Resistor 1K ERD-25T J	C617	0B05681A	Mylar Capacitor 0.01μ 50V J
R105,205	0B05625A	Carbon Resistor 220K ERD-25T J	C618	0B01412A	Electrolytic Capacitor 10μ 16V	R105,205	0B05625A	Carbon Resistor 220K ERD-25T J	C618	0B01412A	Electrolytic Capacitor 10μ 16V
R106,206	0B01679A	Carbon Resistor 100 ERD-25T J	SW1	0B07382A	Lever Switch 6-2N	R106,206	0B01679A	Carbon Resistor 100 ERD-25T J	SW1	0B07382A	Lever Switch 6-2N
R107,207	0B09547A	Metal Film Resistor 2.21K SN14K2E F	SW2,4	0B07384A	Lever Switch 2-3N	R107,207	0B09547A	Metal Film Resistor 2.21K SN14K2E F	SW2,4	0B07384A	Lever Switch 2-3N
R108,208	0B09271A	Carbon Resistor 6.2K ERD-25T J	SW3	0B07383A	Lever Switch 2-2S	R108,208	0B09271A	Carbon Resistor 6.2K ERD-25T J	SW3	0B07383A	Lever Switch 2-2S
R109,209	0B05776A	Carbon Resistor 1M ERD-25T J	SW5	0B07285A	Lever Switch 4-2S	R109,209	0B05776A	Carbon Resistor 1M ERD-25T J	SW5	0B07285A	Lever Switch 4-2S
R110,210	0B09463A	Metal Film Resistor 110K SN14K2E F	SW6	0B07304A	Lever Switch 6-3S	R110,210	0B09463A	Metal Film Resistor 110K SN14K2E F	SW6	0B07304A	Lever Switch 6-3S
R111,211	0B05615A	Carbon Resistor 22K ERD-25T J		0B08896A	Shield Plate (1 pce.)	R111,211	0B05615A	Carbon Resistor 22K ERD-25T J		0B08896A	Shield Plate (1 pce.)
R301,302	0B09215A	Fail Safe Type Resistor 100 RDF-25S J				R301,302	0B09215A	Fail Safe Type Resistor 100 RDF-25S J			

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 - - PB Eq. Amp. -						
Q104,105 204,205	0B06180A	Transistor 2SA970 (GR)	R145,245 R305,306 R314	0B05936A 0B09213A 0B05776A	Carbon Resistor 10 ERD-25T J Fail Safe Type Resistor 150 RDF-25S J Carbon Resistor 1M ERD-25T J	R160,161 260,261	0B05625A	Carbon Resistor 220K ERD-25T J
Q106,206 L104,204 VR101,201	0B06142A 0B00068A 0B07233A	Transistor 2SC2240 (BL) Trap Coil 10.5mH Semi-fixed Volume 10K	C122,222 C123,223 C124,224 C125,225 C126,226 C127,227 C128,228 C129,229 C130,230 C305,306	0B05583A 0B09223A 0B05659A 0B01412A 0B05685A 0B01914A 0B09247A 0B09286A 0B09332A 0B01502A	Mylar Capacitor 0.033μ 50V J Electrolytic Capacitor 1μ 50V (LN) Mylar Capacitor 5600P 50V J Electrolytic Capacitor 10μ 16V Mylar Capacitor 0.082μ 50V J Mylar Capacitor 3300P 50V J Mica Capacitor 220P 50V J Ceramic Capacitor 470P 50V K PP Capacitor 330P 100V J Electrolytic Capacitor 330μ 16V	R162,262 R163,263 R164,264 311 R165,265 324,325 R166,266 R167,267 331 R309,310 R312,313 C136,236 C137,237 C138,238 C309,310	0B01856A 0B05622A 0B05627A 0B01888A 0B05936A 0B01889A 0B09215A 0B05671A 0B09222A 0B09218A 0B09147A 0B01403A	Carbon Resistor 8.2K ERD-25T J Carbon Resistor 2.2K ERD-25T J Carbon Resistor 330K ERD-25T J Carbon Resistor 10K ERD-25T J Carbon Resistor 10 ERD-25T J Carbon Resistor 100K ERD-25T J Fail Safe Type Resistor 100 RDF-25S J Carbon Resistor 2.2M ERD-25T J Electrolytic Capacitor 0.47μ 50V (LN) Electrolytic Capacitor 47μ 16V (LN) Electrolytic Capacitor 3.3μ 50V (LN) Electrolytic Capacitor 47μ 16V
R116,216 R117,217 R118,218 R119,219	0B05625A 0B01889A 0B05631A 0B09309A	Carbon Resistor 220K ERD-25T J Carbon Resistor 100K ERD-25T J Carbon Resistor 82 ERD-25T J Carbon Resistor 2.2K ERD-25TS J (Noiseless)	IC305 Q109,209 Q110,210 R146,148 246,248 R147,247 R149,249 R307,308 C131,231 C307,308	0B06217A 0B06066A 0B06089A 0B01889A 0B01706A 0B09321A 0B09216A 0B09291A 0B01400A	IC RC4560D Transistor 2SD471 Transistor 2SB564 Carbon Resistor 100K ERD-25T J Carbon Resistor 47 ERD-25T J Fail Safe Type Resistor 4.7 RDF-25S J Fail Safe Type Resistor 10 RDF-25S J Ceramic Capacitor 0.022μ 50V Z Electrolytic Capacitor 100μ 16V		- Headphone Amp. -	
R120,220 R122,222	0B09431A 0B09310A	Metal Film Resistor 8.06K SN14K2E F Carbon Resistor 33K ERD-25TS J (Noiseless)	IC304 Q103,203 L103,203 R101,106 201,206 R102,104 202,204 R103,203 R105,205 R107,207 R108,208 R153,253 R303,304 R332 R333 C107,207 C108,208 C109,209 C133,233 C303,304	0B06146A 0B01872A 0B03919B 0B01857A 0B05625A 0B09507A 0B09582A 0B01888A 0B05575A 0B05622A 0B09210A 0B05509A 0B05627A 0B09223A 0B09148A 0B09409A 0B09222A 0B01400A	IC RC4558DD Transistor 2SC945 (L) Inductor 36mH Carbon Resistor 1K ERD-25T J Carbon Resistor 220K ERD-25T J Metal Film Resistor 3.57K SN14K2E F Metal Film Resistor 43.2K SN14K2E F Carbon Resistor 10K ERD-25T J Carbon Resistor 560 ERD-25T J Carbon Resistor 2.2K ERD-25T J Fail Safe Type Resistor 33 RDF-25S J Carbon Resistor 33K ERD-25T J Carbon Resistor 330K ERD-25T J Electrolytic Capacitor 1μ 50V (LN) Electrolytic Capacitor 10μ 25V (LN) PP Capacitor 1800P 100V G Electrolytic Capacitor 0.47μ 50V (LN) Electrolytic Capacitor 100μ 16V		- Line Amp. -	
R123,223 R124,224 R125,225	0B05620A 0B01706A 0B09388A	Carbon Resistor 270K ERD-25T J Carbon Resistor 47 ERD-25T J Carbon Resistor 5.1K ERD-25TS J (Noiseless)	R322 R323 C315 C316,317 C318 C319	0B06146A 0B01872A 0B03919B 0B01857A 0B05625A	IC RC4558DD Transistor 2SC945 (L) Inductor 36mH Carbon Resistor 1K ERD-25T J Carbon Resistor 220K ERD-25T J	Q301,302 Q303 Q304 L301 R315,316 R317,318 R319 R320 R321 R322 R323 C315 C316,317 C318 C319	0B01872A 0B06202A 0B06013A 0B06613A 0B09212A 0B05668A 0B09295A 0B09296A 0B01682A 0B05692A 0B05509A 0B01402A 0B09191A 0B09405A 0B09254A QJ04417A	Transistor 2SC945 (L) Transistor 2SA562 (Y) Transistor 2SA733 Osc. Coil Fail Safe Type Resistor 2.2 RDF-25S J Carbon Resistor 82K ERD-25T J Fail Safe Type Resistor 82 RSF-2B J Fail Safe Type Resistor 39 RSF-1/2B J Carbon Resistor 6.8K ERD-25T J Carbon Resistor 68K ERD-25T J Carbon Resistor 33K ERD-25T J Electrolytic Capacitor 4.7μ 25V PP Capacitor 4700P 100V G PP Capacitor 0.022μ 100V J PP Capacitor 0.068μ 100V J Osc. Coil Shield Plate (1 pce.)
R126,226	0B09311A	Carbon Resistor 68K ERD-25TS J (Noiseless)					- Bias Osc. -	
R127,227 R128,228 R129,229 R130,131 230,231 C111,211 C112,114 212,214 C113,213 C115,215 C116,216 C117,217 C118,218 C119,120 219,220	0B05575A 0B05691A 0B01888A 0B05614A 0B09218A 0B09281A 0B09151A 0B05557A 0B09187A 0B09247A 0B01804A 0B01403A	Carbon Resistor 560 ERD-25T J Carbon Resistor 390 ERD-25T J Carbon Resistor 10K ERD-25T J Carbon Resistor 1.8K ERD-25T J Electrolytic Capacitor 47μ 16V (LN) Ceramic Capacitor 150P 50V K Electrolytic Capacitor 220μ 6.3V (LN) Mylar Capacitor 0.015μ 50V J Electrolytic Capacitor 1μ 50V (BP) Mica Capacitor 220P 50V J Mylar Capacitor 3900P 50V J Electrolytic Capacitor 47μ 16V						
IC302 Q107,108 207,208 D102,103 104,202 203,204 301,302 L105,106 205,206 R133,136 233,236 R134,234 R135,138 235,238 R137,237 R139,239 R140,240 R141,142 241,242 R143,243 R144,244	0B06146A 0B06070A 0B06181A 0B00068A 0B01683A 0B01679A 0B05640A 0B05675A 0B01854A 0B05691A 0B05615A 0B05614A 0B01888A	IC RC4558DD Transistor 2SC1636 Silicon Diode 1SS53 Trap Coil 10.5mH Carbon Resistor 15K ERD-25T J Carbon Resistor 100 ERD-25T J Carbon Resistor 180K ERD-25T J Carbon Resistor 3.9K ERD-25T J Carbon Resistor 39K ERD-25T J Carbon Resistor 390 ERD-25T J Carbon Resistor 22K ERD-25T J Carbon Resistor 1.8K ERD-25T J Carbon Resistor 10K ERD-25T J					- Rec. Amp. -	
VR102,202 VR103,203	0B07269A 0B07341A	Semi-fixed Volume 50K Semi-fixed Volume 5K						
							- Meter Amp. -	

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

Note: Diode is 1SS53 unless otherwise specified.

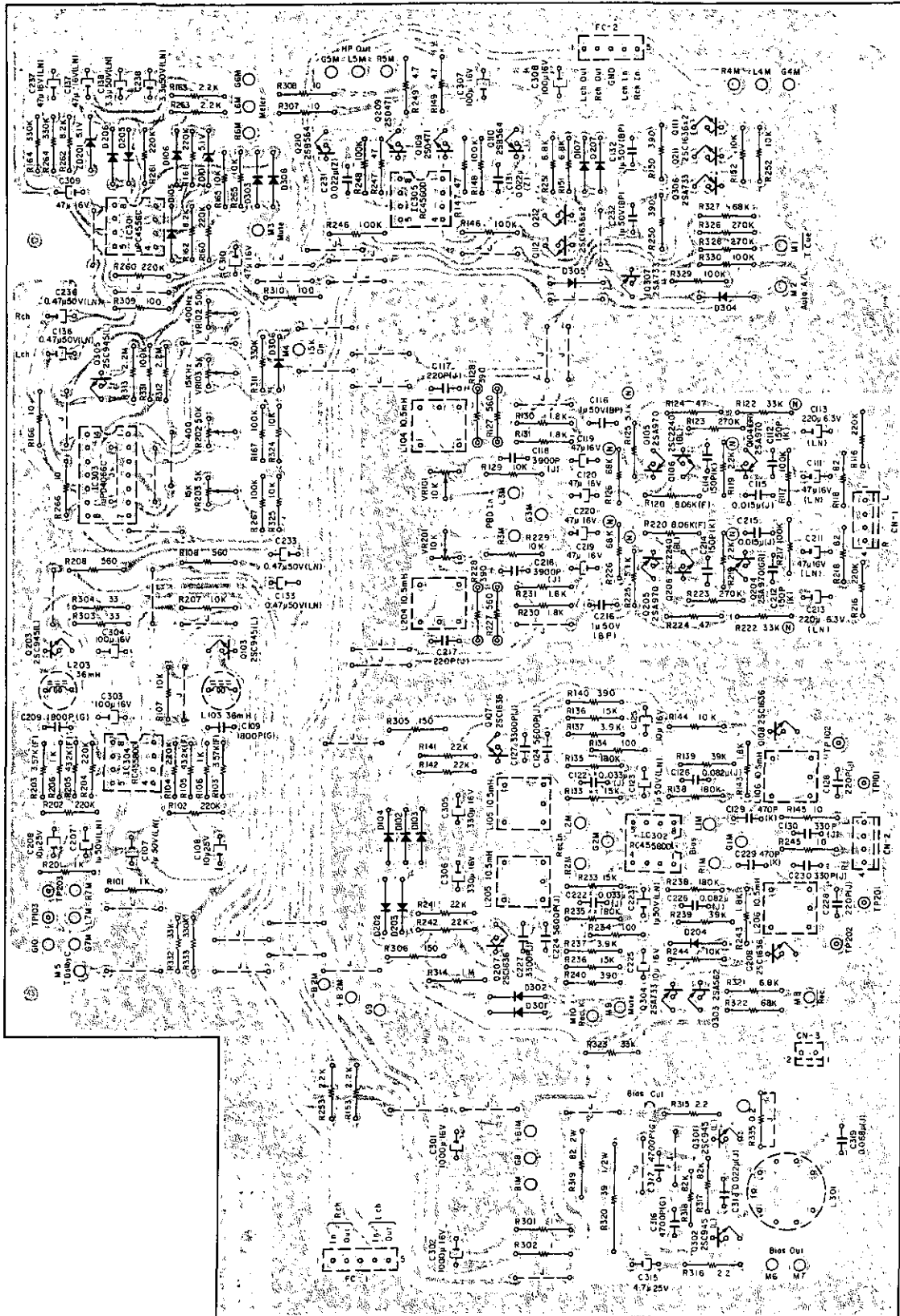


Fig. 7.13.1 Serial No.: A12202862 -

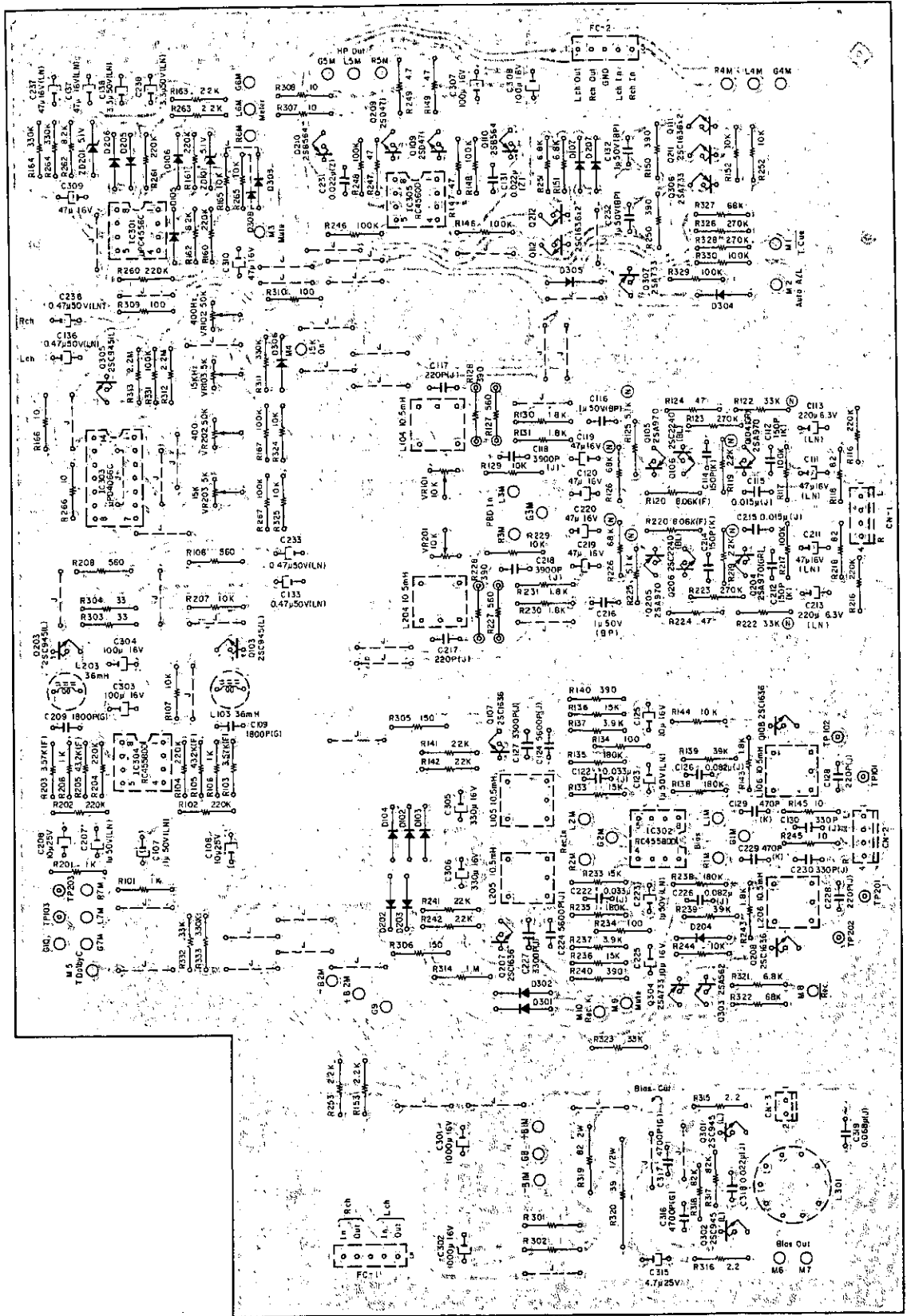


Fig. 7.13.2 Serial Nos.: A12201001 – A12202861

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	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
			C124,224	0B05659A	Mylar Capacitor 5600P 50V J	311		
Q104,105	0B06180A	Transistor 2SA970 (GR)	C125,225	0B01412A	Electrolytic Capacitor 10μ 16V	R165,265	0B01888A	Carbon Resistor 10K ERD-25T J
204,205			C126,226	0B05685A	Mylar Capacitor 0.082μ 50V J	324,325		
Q106,206	0B06142A	Transistor 2SC2240 (BL)	C127,227	0B01914A	Mylar Capacitor 3300P 50V J	R166,266	0B05936A	Carbon Resistor 10 ERD-25T J
L104,204	0B00068A	Trap Coil 10.5mH	C128,228	0B09247A	Mica Capacitor 220P 50V J	R167,267	0B01889A	Carbon Resistor 100K ERD-25T J
VR101,201	0B07233A	Semi-fixed Volume 10K	C129,229	0B09286A	Ceramic Capacitor 470P 50V K	331		
R116,216	0B05625A	Carbon Resistor 220K ERD-25T J	C130,230	0B09332A	PP Capacitor 330P 100V J	R309,310	0B09215A	Fail Safe Type Resistor 100 RDF-25S J
R117,217	0B01889A	Carbon Resistor 100K ERD-25T J	C305,306	0B01502A	Electrolytic Capacitor 330μ 16V	R312,313	0B05671A	Carbon Resistor 2.2M ERD-25T J
R118,218	0B05631A	Carbon Resistor 82 ERD-25T J				C136,236	0B09222A	Electrolytic Capacitor 0.47μ 50V (LN)
R119,219	0B09309A	Carbon Resistor 2.2K ERD-25T J (Noiseless)				C137,237	0B09218A	Electrolytic Capacitor 47μ 16V (LN)
						C138,238	0B09147A	Electrolytic Capacitor 3.3μ 50V (LN)
R120,220	0B09431A	Metal Film Resistor 8.06K SN14K2E F				C309,310	0B01403A	Electrolytic Capacitor 47μ 16V
R122,222	0B09310A	Carbon Resistor 33K ERD-25T J (Noiseless)	IC305	0B06217A	IC RC4560D			
			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)	246,248					
R126,226	0B09311A	Carbon Resistor 68K ERD-25T J (Noiseless)	R147,247	0B01706A	Carbon Resistor 47 ERD-25T J	Q301,302	0B01872A	Transistor 2SC945 (L)
R127,227	0B05575A	Carbon Resistor 560 ERD-25T J	R149,249	0B09321A	Fail Safe Type Resistor 4.7RDF-25S J	Q303	0B06202A	Transistor 2SA562 (Y)
R128,228	0B05691A	Carbon Resistor 390 ERD-25T J	R307,308	0B09216A	Fail Safe Type Resistor 10 RDF-25S J	Q304	0B06013A	Transistor 2SA733
R129,229	0B01888A	Carbon Resistor 10K ERD-25T J	C131,231	0B09291A	Ceramic Capacitor 0.022μ 50V Z	L301	0B06613A	Osc. Coil
R130,131	0B05614A	Carbon Resistor 1.8K ERD-25T J	C307,308	0B01400A	Electrolytic Capacitor 100μ 16V	R315,316	0B09212A	Fail Safe Type Resistor 2.2RDF-25S J
230,231						R317,318	0B05668A	Carbon Resistor 82K ERD-25T J
C111,211	0B09218A	Electrolytic Capacitor 47μ 16V (LN)				R319	0B09295A	Fail Safe Type Resistor 82 RSF-2B J
C112,114	0B09281A	Ceramic Capacitor 150P 50V K				R320	0B09296A	Fail Safe Type Resistor 39 RSF-1/2B J
212,214						R321	0B01682A	Carbon Resistor 6.8K ERD-25T J
C113,213	0B09151A	Electrolytic Capacitor 220μ 6.3V (LN)	IC304	0B06146A	IC RC4558DD	R322	0B05692A	Carbon Resistor 68K ERD-25T J
C115,215	0B0557A	Mylar Capacitor 0.015μ 50V J	Q103,203	0B01872A	Transistor 2SC945 (L)	R323	0B05509A	Carbon Resistor 33K ERD-25T J
C116,216	0B09187A	Electrolytic Capacitor 1μ 50V (BP)	L103,203	0B03919B	Inductor 36mH	C315	0B01402A	Electrolytic Capacitor 4.7μ 25V
C117,217	0B09247A	Mica Capacitor 220P 50V J	R101,106	0B01857A	Carbon Resistor 1K ERD-25T J	C316,317	0B09191A	PP Capacitor 4700P 100V G
C118,218	0B01804A	Mylar Capacitor 3900P 50V J	201,206			C318	0B09405A	PP Capacitor 0.022μ 100V J
C119,120	0B01403A	Electrolytic Capacitor 47μ 16V	R102,104	0B05625A	Carbon Resistor 220K ERD-25T J	C319	0B09254A	PP Capacitor 0.068μ 100V J
219,220			202,204				QJ04417A	Osc. Coil Shield Plate (1 pce.)
			R103,203	0B09507A	Metal Film Resistor 3.57K SN14K2E F			
			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			
			R332	0B05509A	Carbon Resistor 33K ERD-25T J	Q111,112	0B07977A	Main P.C.B.
IC302	0B06146A	IC RC4558DD	R333	0B05627A	Carbon Resistor 330K ERD-25T J	211,212	0B06070A	Transistor 2SC1636
Q107,108	0B06070A	Transistor 2SC1636	C107,207	0B09223A	Electrolytic Capacitor 1μ 50V (LN)	Q306,307	0B06013A	Transistor 2SA733
207,208			C108,208	0B09148A	Electrolytic Capacitor 10μ 25V (LN)	D107,207	0B06181A	Silicon Diode 1SS53
D102,103	0B06181A	Silicon Diode 1SS53	C109,209	0B09409A	PP Capacitor 1800P 100V G	R150,250	0B05691A	Carbon Resistor 390 ERD-25T J
104,202			C133,233	0B09222A	Electrolytic Capacitor 0.47μ 50V (LN)	R151,251	0B01682A	Carbon Resistor 6.8K ERD-25T J
203,204			C303,304	0B01400A	Electrolytic Capacitor 100μ 16V	R152,252	0B01888A	Carbon Resistor 10K ERD-25T J
301,302						R301,302	0B09214A	Fail Safe Type Resistor 1 RDF-25S J
L105,106	0B00068A	Trap Coil 10.5mH				R326,328	0B05620A	Carbon Resistor 270K ERD-25T J
205,206						R327	0B05692A	Carbon Resistor 68K ERD-25T J
R133,136	0B01683A	Carbon Resistor 15K ERD-25T J				R329,330	0B01889A	Carbon Resistor 100K ERD-25T J
233,236						C132,232	0B09187A	Electrolytic Capacitor 1μ 50V (BP)
R134,234	0B01679A	Carbon Resistor 100 ERD-25T J	IC301	0B06216A	IC μPC4556C	C301,302	0B01397A	Electrolytic Capacitor 1000μ 16V
R135,138	0B05640A	Carbon Resistor 180K ERD-25T J	IC303	0B06144A	IC μPD4066BC	CN1,2	0B08654A	4P-T Post
235,238			Q305	0B01872A	Transistor 2SC945 (L)	CN3	0B08656A	2P-T Post
R137,237	0B05675A	Carbon Resistor 3.9K ERD-25T J	ZD101,201	0B06058A	Zener Diode 5.1V YZ051			
R139,239	0B01854A	Carbon Resistor 39K ERD-25T J	D105,106	0B06181A	Silicon Diode 1SS53			
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			

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

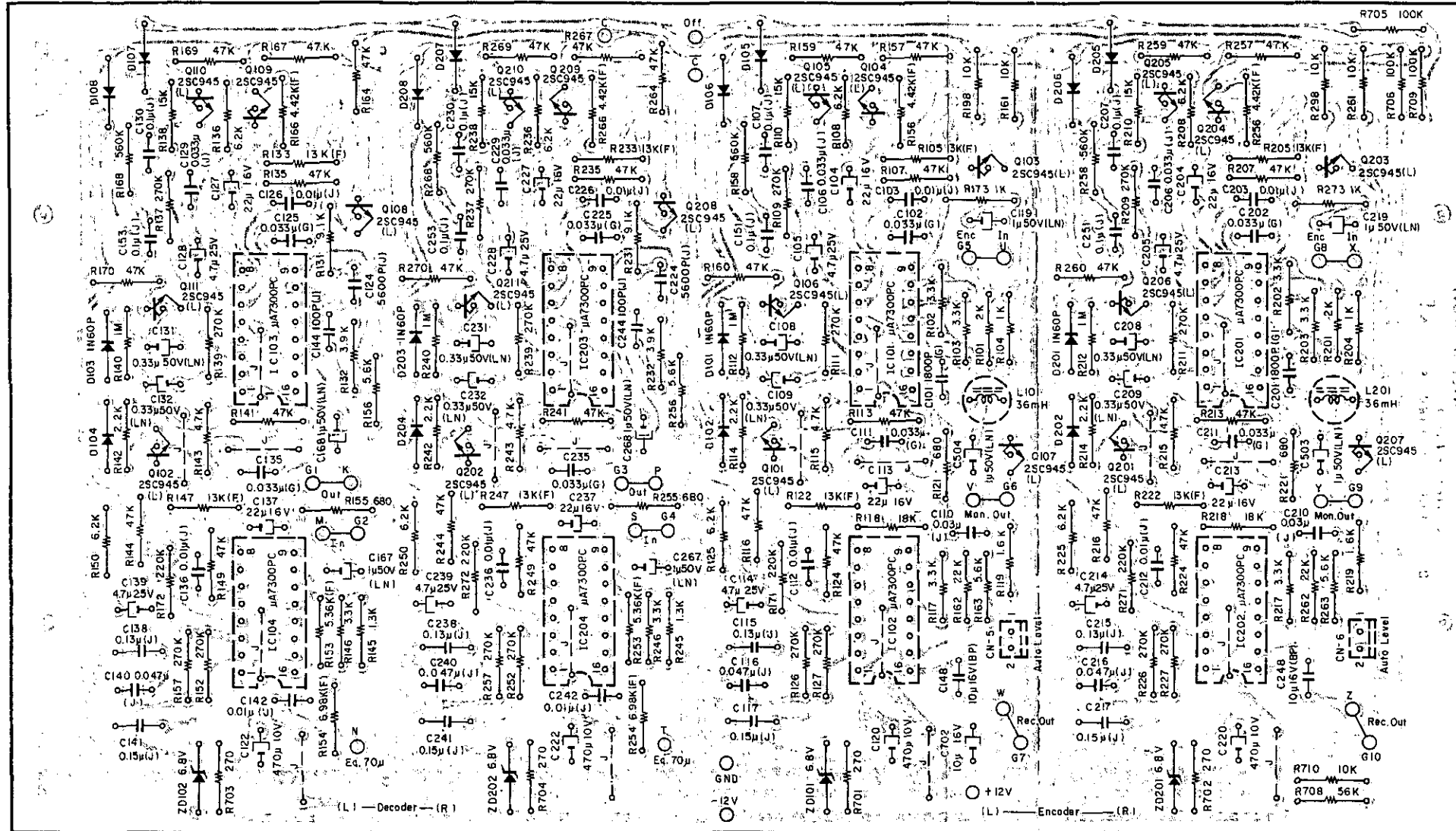


Fig. 7.14.1 Serial No.: A12202862 -

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	OB06200A	IC μ A7300PC
Q102,108 109,110 111,202 208,209 210,211	OB01872A	Transistor 2SC945 (L)
ZD102,202	OB06315A	Zener Diode 6.8V YZ068
D103,203	OB00030A	Germanium Diode 1N60P
D104,107	OB06181A	Silicon Diode 1SS53
108,204 207,208		
R131,231	OB09226A	Carbon Resistor 9.1K ERD-25T J
R132,232	OB05675A	Carbon Resistor 3.9K ERD-25T J
R133,147 233,247	OB09557A	Metal Film Resistor 13K SN14K2E F
R135,141 144,149 164,167 169,170 235,241 244,249 264,267 269,270	OB05641A	Carbon Resistor 47K ERD-25T J
R136,150 236,250	OB09271A	Carbon Resistor 6.2K ERD-25T J
R137,139 152,157 237,239 252,257	OB05620A	Carbon Resistor 270K ERD-25T J
R138,238	OB01683A	Carbon Resistor 15K ERD-25T J
R140,240	OB05776A	Carbon Resistor 1M ERD-25T J
R142,242	OB05622A	Carbon Resistor 2.2K ERD-25T J
R143,243	OB01846A	Carbon Resistor 4.7K ERD-25T J
R145,245	OB09074A	Carbon Resistor 1.3K ERD-25T J
R146,246	OB01681A	Carbon Resistor 3.3K ERD-25T J
R153,253	OB09426A	Metal Film Resistor 5.36K SN14K2E F
R154,254	OB09604A	Metal Film Resistor 6.98K SN14K2E F
R155,255	OB05794A	Carbon Resistor 680 ERD-25T J
R156,256	OB01887A	Carbon Resistor 5.6K ERD-25T J
R166,266	OB09558A	Metal Film Resistor 4.42K SN14K2E F
R168,268	OB05784A	Carbon Resistor 560K ERD-25T J
R172,272	OB05625A	Carbon Resistor 220K ERD-25T J
R703,704	OB05645A	Carbon Resistor 270 ERD-25T J
C122,222	OB05884A	Electrolytic Capacitor 470 μ 10V
C124,224	OB05659A	Mylar Capacitor 5600P 50V J
C125,135 225,235	OB09240A	PP Capacitor 0.033 μ 100V G
C126,136 142,226 236,242	OB05681A	Mylar Capacitor 0.01 μ 50V J
C127,137 227,237	OB01862A	Electrolytic Capacitor 22 μ 16V
C128,139 228,239	OB01402A	Electrolytic Capacitor 4.7 μ 25V
C129,229	OB05583A	Mylar Capacitor 0.033 μ 50V J
C130,153 230,253	OB01780A	Mylar Capacitor 0.1 μ 50V J

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
C131,132 231,232	OB09567A	Electrolytic Capacitor 0.33μ 50V (LN)	R705,706 709	OB01889A	Carbon Resistor 100K ERD-25T J
C138,238	OB09566A	Mylar Capacitor 0.13μ 50V J	R708	OB05508A	Carbon Resistor 56K ERD-25T J
C140,240	OB05796A	Mylar Capacitor 0.047μ 50V J	C101,201	OB09409A	PP Capacitor 1800P 100V G
C141,241	OB05914A	Mylar Capacitor 0.15μ 50V J	C102,111	OB09240A	PP Capacitor 0.033μ 100V G
C144,244	OB09282A	Ceramic Capacitor 100P 50V K	202,211		
C167,168 267,268	OB09223A	Electrolytic Capacitor 1μ 50V (LN)	C103,112	OB05681A	Mylar Capacitor 0.01μ 50V J
	OB08714A	IC Socket 16P (4 pcs.)	203,212		
	- BC Rec. Dolby NR -		C104,113	OB01862A	Electrolytic Capacitor 22μ 16V
			204,213		
IC101,102 201,202	OB06200A	IC μA7300PC	C105,114	OB01402A	Electrolytic Capacitor 4.7μ 25V
Q101,103 104,105 106,107 201,203 204,205 206,207	OB01872A	Transistor 2SC945 (L)	205,214		
ZD101,201	OB06315A	Zener Diode 6.8V YZ068	C106,206	OB05583A	Mylar Capacitor 0.033μ 50V J
D101,201	OB00030A	Germanium Diode 1N60P	C107,151	OB01780A	Mylar Capacitor 0.1μ 50V J
D102,105 106,202 205,206	OB06181A	Silicon Diode 1SS53	207,251		
L101,201	OB03919A	Inductor 36mH	C108,109 208,209	OB09567A	Electrolytic Capacitor 0.33μ 50V (LN)
R101,201	OB09301A	Carbon Resistor 2K ERD-25T J	C110,210	OB09594A	Mylar Capacitor 0.03μ 50V J
R102,103 117,202 203,217	OB01681A	Carbon Resistor 3.3K ERD-25T J	C115,215	OB09566A	Mylar Capacitor 0.13μ 50V J
R104,173 204,273	OB01857A	Carbon Resistor 1K ERD-25T J	C116,216	OB05796A	Mylar Capacitor 0.047μ 50V J
R105,122 205,222	OB09557A	Metal Film Resistor 13K SN14K2E F	C117,217	OB05914A	Mylar Capacitor 0.15μ 50V J
R107,113 116,124 157,159 160,207 213,216 224,257 259,260	OB05641A	Carbon Resistor 47K ERD-25T J	C119,219 503,504	OB09223A	Electrolytic Capacitor 1μ 50V (LN)
R108,125 208,225	OB09271A	Carbon Resistor 6.2K ERD-25T J	C120,220	OB05884A	Electrolytic Capacitor 470μ 10V
R109,111 126,127 209,211 226,227	OB05620A	Carbon Resistor 270K ERD-25T J	C148,248	OB09163A	Electrolytic Capacitor 10μ 16V (BP)
R110,210	OB01683A	Carbon Resistor 15K ERD-25T J	C702	OB01412A	Electrolytic Capacitor 10μ 16V
R112,212	OB05776A	Carbon Resistor 1M ERD-25T J		OB08714A	IC Socket 16P (4 pcs.)
R114,214	OB05622A	Carbon Resistor 2.2K ERD-25T J		- Miscellaneous -	
R115,215	OB01846A	Carbon Resistor 4.7K ERD-25T J		OB07986B	Dolby NR P.C.B.
R118,218	OB05560A	Carbon Resistor 18K ERD-25T J			
R119,219	OB09565A	Carbon Resistor 1.6K ERD-25T J			
R121,221	OB05794A	Carbon Resistor 680 ERD-25T J			
R156,256	OB09558A	Metal Film Resistor 4.42K SN14K2E F			
R158,258	OB05784A	Carbon Resistor 560K ERD-25T J			
R161,198 261,298 710	OB01888A	Carbon Resistor 10K ERD-25T J			
R162,262	OB05615A	Carbon Resistor 22K ERD-25T J			
R163,263	OB01887A	Carbon Resistor 5.6K ERD-25T J			
R171,271	OB05625A	Carbon Resistor 220K ERD-25T J			
R701,702	OB05645A	Carbon Resistor 270 ERD-25T 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 C138,238 C140,240 C141,241 C144,244 C167,168 267,268	OB09567A	Electrolytic Capacitor 0.33μ 50V (LN)
	-BC PB Dolby NR -			OB09566A	Mylar Capacitor 0.13μ 50V J
				OB05796A	Mylar Capacitor 0.047μ 50V J
				OB05914A	Mylar Capacitor 0.15μ 50V J
IC103,104 203,204	OB06200A	IC μA7300PC		OB09282A	Ceramic Capacitor 100P 50V K
Q102,108 109,110 111,202 208,209 210,211	OB01872A	Transistor 2SC945 (L)		OB09223A	Electrolytic Capacitor 1μ 50V (LN)
ZD102,202	OB06315A	Zener Diode 6.8V YZ068		OB08714A	IC Socket 16P (4 pcs.)
D103,203	OB00030A	Germanium Diode 1N60P	IC101,102 201,202	OB06200A	IC μA7300PC
D104,107 108,204 207,208	OB06181A	Silicon Diode 1SS53	Q101,103 104,105 106,107 201,203 204,205 206,207	OB01872A	Transistor 2SC945 (L)
R131,231	OB09226A	Carbon Resistor 9.1K ERD-25T J	ZD101,201	OB06315A	Zener Diode 6.8V YZ068
R132,232	OB05675A	Carbon Resistor 3.9K ERD-25T J	D101,201	OB00030A	Germanium Diode 1N60P
R133,147 233,247	OB09557A	Metal Film Resistor 13K SN14K2E F	D102,105 106,202 205,206	OB06181A	Silicon Diode 1SS53
R135,141 144,149 164,167 169,170 235,241 244,249 264,267 269,270	OB05641A	Carbon Resistor 47K ERD-25T J	L101,201	OB03919A	Inductor 36mH
R136,150 236,250	OB09271A	Carbon Resistor 6.2K ERD-25T J	R101,201	OB09301A	Carbon Resistor 2K ERD-25T J
R137,139 152,157 237,239 252,257	OB05620A	Carbon Resistor 270K ERD-25T J	R102,103 117,202 203,217 R104,173 204,273	OB01681A	Carbon Resistor 3.3K ERD-25T J
R138,238	OB01683A	Carbon Resistor 15K ERD-25T J	R105,122 205,222 R107,113 116,124 157,159 160,207 213,216 224,257 259,260	OB01857A	Carbon Resistor 1K ERD-25T J
R140,240	OB05776A	Carbon Resistor 1M ERD-25T J	R108,125 208,225	OB09557A	Metal Film Resistor 13K SN14K2E F
R142,242	OB05622A	Carbon Resistor 2.2K ERD-25T J	R109,111 126,127 209,211 226,227	OB05641A	Carbon Resistor 47K ERD-25T J
R143,243	OB01846A	Carbon Resistor 4.7K ERD-25T J	R110,210	OB09271A	Carbon Resistor 6.2K ERD-25T J
R145,245	OB09074A	Carbon Resistor 1.3K ERD-25T J	R112,212	OB05620A	Carbon Resistor 270K ERD-25T J
R146,246	OB01681A	Carbon Resistor 3.3K ERD-25T J	R114,214	OB05622A	Carbon Resistor 2.2K ERD-25T J
R153,253	OB09426A	Metal Film Resistor 5.36K SN14K2E F	R115,215	OB01846A	Carbon Resistor 4.7K ERD-25T J
R154,254	OB09604A	Metal Film Resistor 6.98K SN14K2E F	R118,218	OB05560A	Carbon Resistor 18K ERD-25T J
R155,255	OB05794A	Carbon Resistor 680 ERD-25T J	R119,219	OB09565A	Carbon Resistor 1.6K ERD-25T J
R156,256	OB01887A	Carbon Resistor 5.6K ERD-25T J	R121,221	OB05794A	Carbon Resistor 680 ERD-25T J
R166,266	OB09558A	Metal Film Resistor 4.42K SN14K2E F	R156,256	OB09558A	Metal Film Resistor 4.42K SN14K2E F
R168,268	OB05784A	Carbon Resistor 560K ERD-25T J	R158,258	OB05784A	Carbon Resistor 560K ERD-25T J
R172,272	OB05625A	Carbon Resistor 220K ERD-25T J	R161,198 261,298 710	OB01888A	Carbon Resistor 10K ERD-25T J
R703,704	OB05645A	Carbon Resistor 270 ERD-25T J	R162,262	OB05615A	Carbon Resistor 22K ERD-25T J
C122,222	OB05884A	Electrolytic Capacitor 470μ 10V	R163,263	OB01887A	Carbon Resistor 5.6K ERD-25T J
C124,224	OB05659A	Mylar Capacitor 5800P 50V J	R171,271	OB05625A	Carbon Resistor 220K ERD-25T J
C125,135 225,235	OB09240A	PP Capacitor 0.033μ 100V G	R701,702	OB05645A	Carbon Resistor 270 ERD-25T J
C126,136 142,226 236,242	OB05681A	Mylar Capacitor 0.01μ 50V J			
C127,137 227,237	OB01862A	Electrolytic Capacitor 22μ 16V			
C128,139 228,239	OB01402A	Electrolytic Capacitor 4.7μ 25V			
C129,229	OB05583A	Mylar Capacitor 0.033μ 50V J			
C130,153 230,253	OB01780A	Mylar Capacitor 0.1μ 50V J			

Schematic Ref. No.	Part No.	Description
R705,706 709	0B01889A	Carbon Resistor 100K ERD-25T J
R708	0B05508A	Carbon Resistor 56K ERD-25T J
C101,201	0B09409A	PP Capacitor 1800P 100V G
C102,111 202,211	0B09240A	PP Capacitor 0.033μ 100V G
C103,112 203,212	0B05681A	Mylar Capacitor 0.01μ 50V J
C104,113 204,213	0B01862A	Electrolytic Capacitor 22μ 16V
C105,114 205,214	0B01402A	Electrolytic Capacitor 4.7μ 25V
C106,206	0B05583A	Mylar Capacitor 0.033μ 50V J
C107,151 207,251	0B01780A	Mylar Capacitor 0.1μ 50V J
C108,109 208,209	0B09567A	Electrolytic Capacitor 0.33μ 50V (LN)
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
C119,219 503,504	0B09223A	Electrolytic Capacitor 1μ 50V (LN)
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.

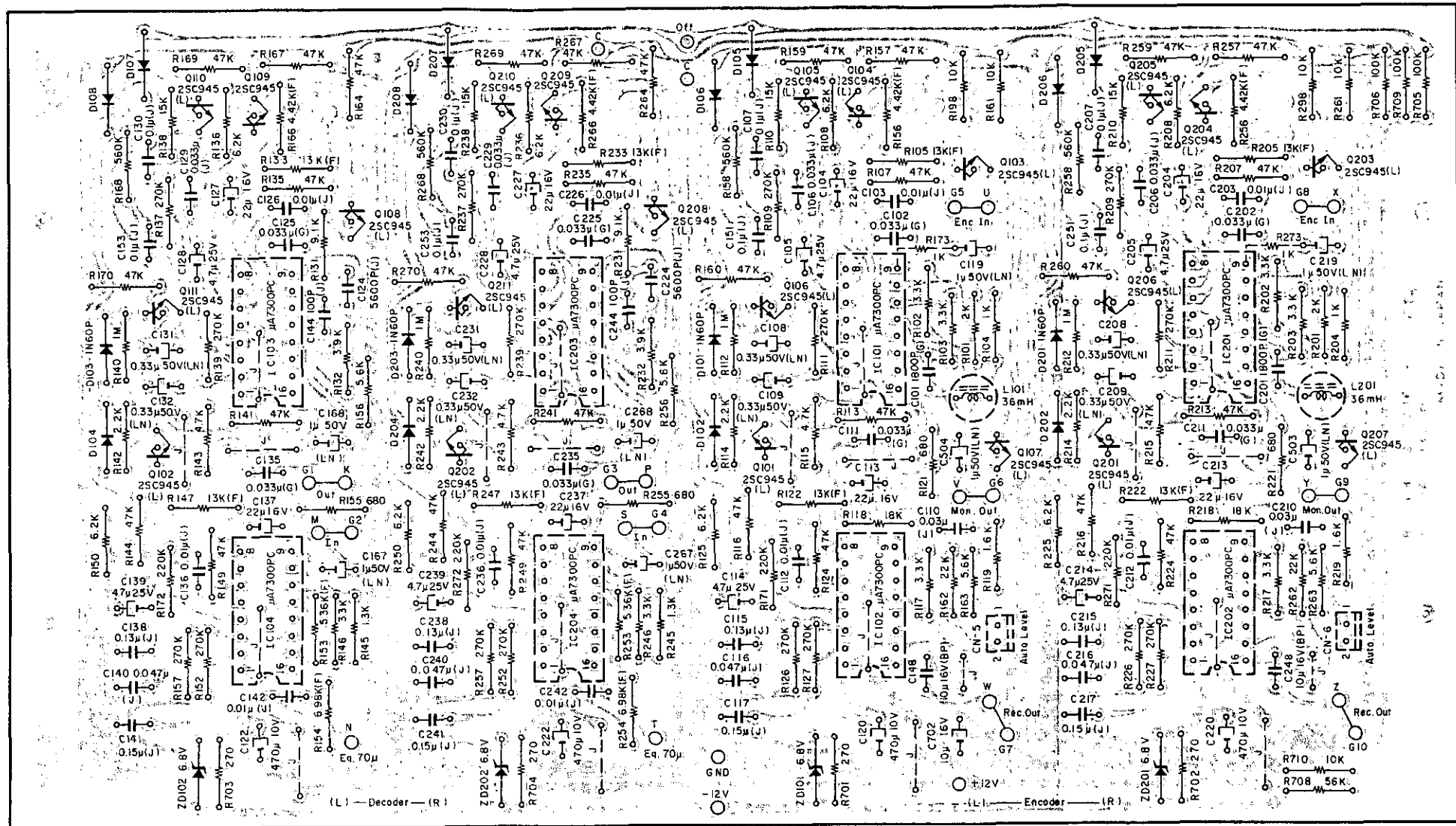


Fig. 7.14.2 Serial Nos.: A12201001 – A12202861

Note: Diode is 1SS53 unless otherwise specified.

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

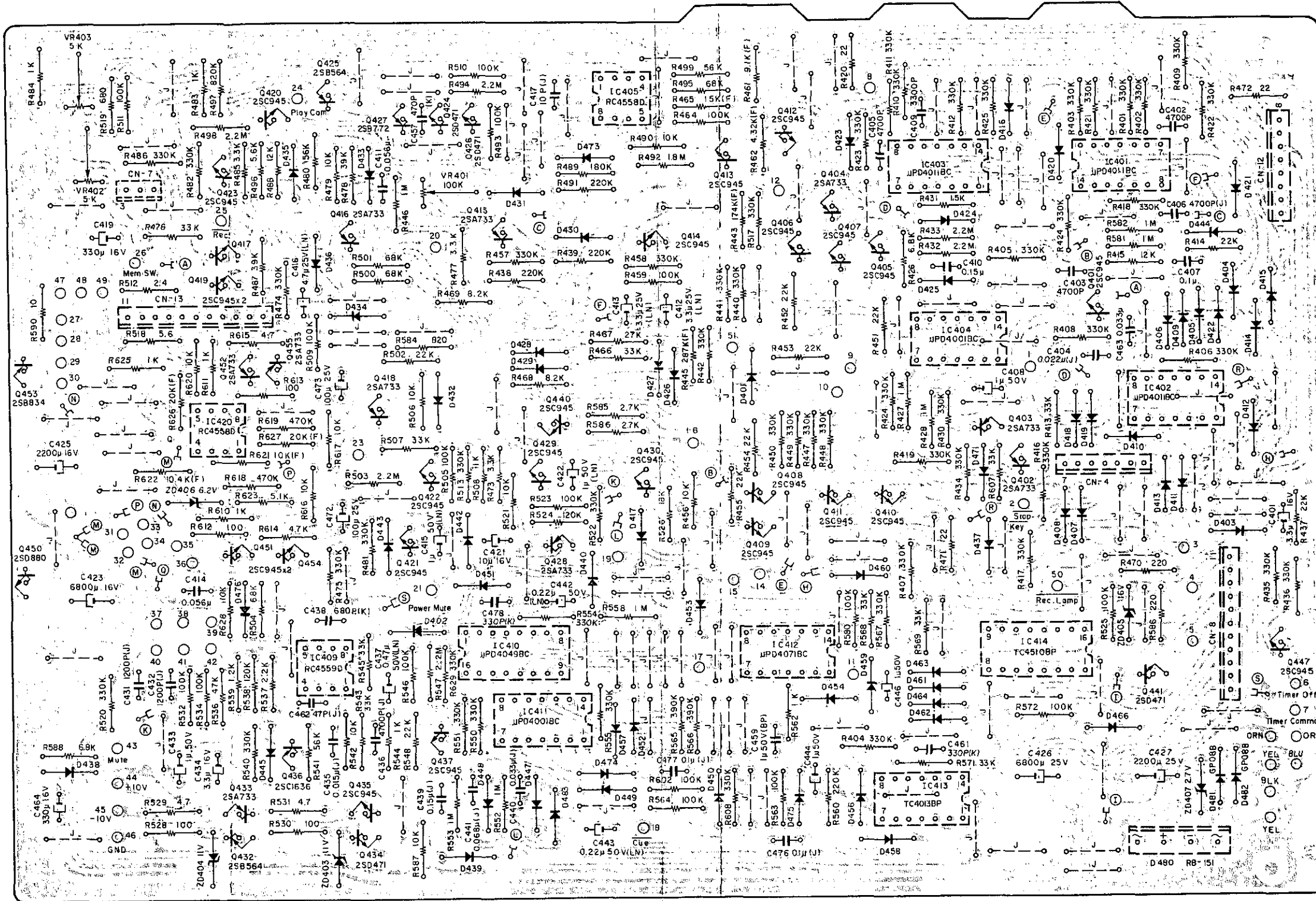


Fig. 7.15.1 Serial No.: A12204890 -

Note: Diode is 1SS53 unless otherwise specified.

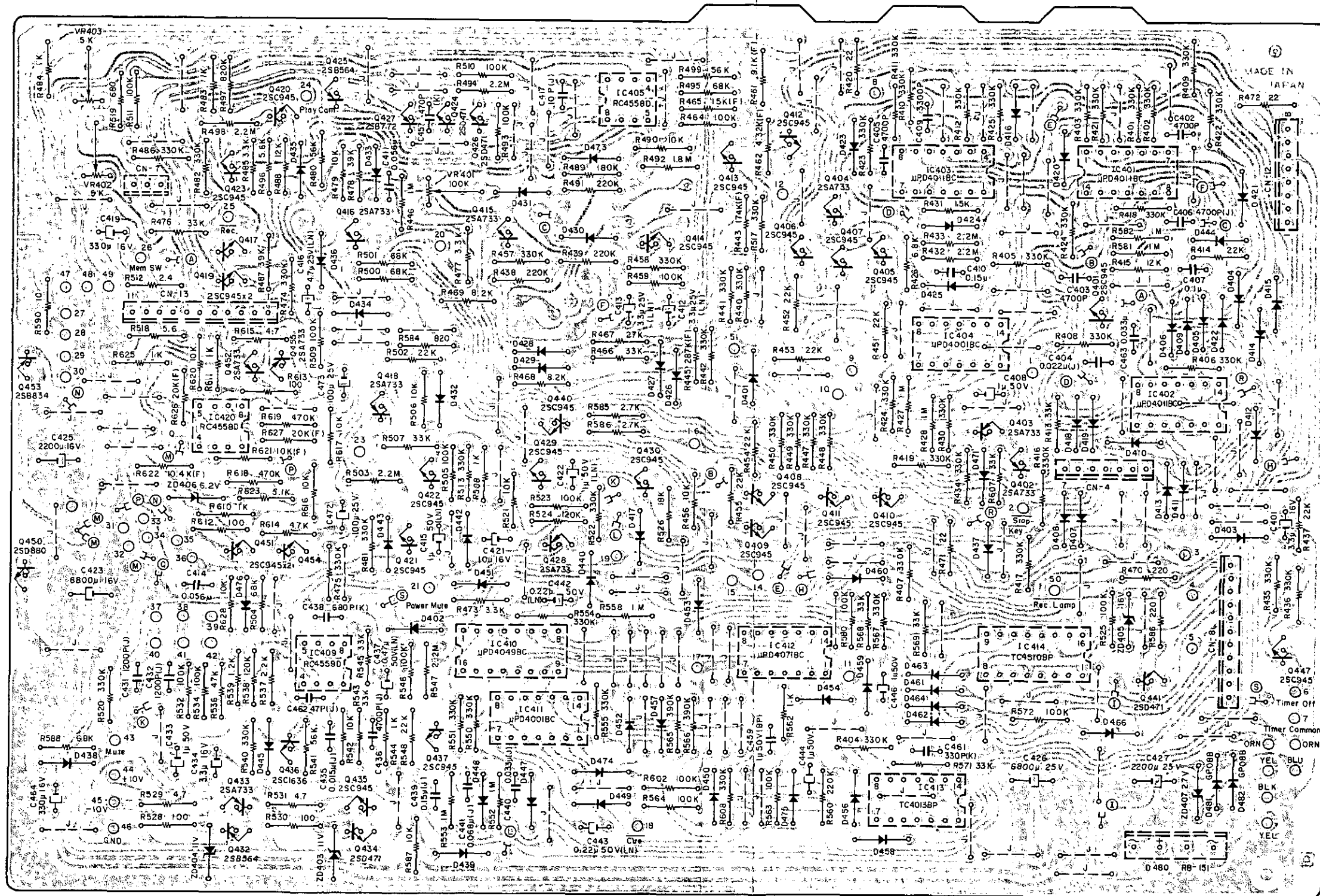


Fig. 7.15.2 Serial Nos.: A12202862 - A12204889

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
	BA04465A	Logic P.C.B. Ass'y Serial No.: A12204890 --	R415,488	0B09263A	Carbon Resistor 12K ERD-25T J	C417	0B09277A	Ceramic Capacitor 10P 50V J	C462	0B09280A	Ceramic Capacitor 47P 50V J
			R420,471	0B09049A	Fail Safe Type Resistor 22 RDF-25S J	C419,464	0B01502A	Electrolytic Capacitor 330μ 16V	C476,477	0B05681A	Mylar Capacitor 0.01μ 50V J
	-- Logic --		472			C421	0B01412A	Electrolytic Capacitor 10μ 16V	-- Power Supply --		
IC401,402	0B06178A	IC μPD4011BC	R426,504	0B01682A	Carbon Resistor 6.8K ERD-25T J	C457	0B09286A	Ceramic Capacitor 470P 50V K			
403			588			C463	0B05513A	Mylar Capacitor 0.033μ 50V	IC420	0B06124B	IC RC4558D
IC404	0B06143A	IC μPD4001BC	R427,428	0B05776A	Carbon Resistor 1M ERD-25T J	CN4	0B08643A	7P-T Post	Q432	0B06059A	Transistor 2SB564
IC405	0B06124B	IC RC4558D	446,581			CN7	0B08653A	3P-T Post	Q433,452	0B06013A	Transistor 2SA733
Q401,405	0B06100A	Transistor 2SC945 (A)	582			CN8,13	0B08655A	11P-T Post	455		
406,407			R431	0B05698A	Carbon Resistor 1.5K ERD-25T J	CN12	0B08644A	8P-T Post	Q434,441	0B06066A	Transistor 2SD471
408,409			R432,433	0B05671A	Carbon Resistor 2.2M ERD-25T J	-- RAMM --			Q435,451	0B06100A	Transistor 2SC945 (A)
410,411			494,498						454		
412,413			503			IC409	0B06127A	IC RC4559D	Q450	0B06255A	Transistor 2SD880 (Y)
414,417			R438,439	0B05625A	Carbon Resistor 220K ERD-25T J	IC410	0B06250A	IC μPD4049BC	Q453	0B06256A	Transistor 2SB834 (Y)
419,420			491			IC411	0B06143A	IC μPD4001BC	ZD403,404	0B06231A	Zener Diode 11V RD11EB2
421,422			R443	0B09367A	Metal Film Resistor 174K SN14K2E F	IC412	0B06214A	IC μPD4071BC	ZD405	0B06154A	Zener Diode 16V RD16EB3
423,429			R445	0B09366A	Metal Film Resistor 287K SN14K2E F	IC413	0B06213A	IC TC4013BP	ZD406	0B06167A	Zener Diode 6.2V RD6.2EB3
430,440			R456,479	0B01888A	Carbon Resistor 10K ERD-25T J	IC414	0B06212A	IC TC4510BP	ZD407	0B06191A	Zener Diode 2.7V 2.7EB
447			490,506			Q436	0B06070A	Transistor 2SC1636	D480	0B06183A	Diode Bridge RB151
Q402,403	0B06013A	Transistor 2SA733	521,587			Q437	0B06100A	Transistor 2SC945 (A)	D481,482	0B06109A	Silicon Diode GP08B
404,415			628			D445	0B06181A	Silicon Diode 1SS53 (22 pcs.)	R528,530	0B09215A	Fail Safe Type Resistor 100 RDF-25S J
416,418			R459,464	0B01889A	Carbon Resistor 100K ERD-25T J	447,454			R529,531	0B09321A	Fail Safe Type Resistor 4.7 RDF-25S J
428			493,505			456,464			R586	0B05930A	Fail Safe Type Resistor 220 RDF-25S J
Q424,426	0B06066A	Transistor 2SD471	509,510			466,474			R610,611	0B01857A	Carbon Resistor 1K ERD-25T J
Q425	0B06069A	Transistor 2SB564	511,523			475,483			625		
Q427	0B06303A	Transistor 2SB772	525,580			R532,534	0B01889A	Carbon Resistor 100K ERD-25T J	R612,613	0B01679A	Carbon Resistor 100 ERD-25T J
D401-440	0B01909A	Silicon Diode 1S1555 (46 pcs.)	R461	0B09328A	Metal Film Resistor 9.1K SN14K2E F	546,563			R614,615	0B01846A	Carbon Resistor 4.7K ERD-25T J
442,443			R462	0B09365A	Metal Film Resistor 4.32K SN14K2E F	564,572			R616,617	0B01888A	Carbon Resistor 10K ERD-25T J
444,471			R465	0B09340A	Metal Film Resistor 15K SN14K2E F	602			620		
473,476			R467	0B05743A	Carbon Resistor 27K ERD-25T J	R536	0B05641A	Carbon Resistor 47K ERD-25T J	R618,619	0B01684A	Carbon Resistor 470K ERD-25T J
VR401	0B03832A	Semi-fixed Volume 100K	R468,469	0B01856A	Carbon Resistor 8.2K ERD-25T J	R537	0B05622A	Carbon Resistor 2.2K ERD-25T J	R621	0B09203A	Metal Film Resistor 10K SN14K2E F
VR402,403	0B03831A	Semi-fixed Volume 5K	R470	0B01933A	Carbon Resistor 220 ERD-25T J	R538	0B05612A	Carbon Resistor 120K ERD-25T J	R622	0B09433A	Metal Film Resistor 10.4K SN14K2E F
R401,402	0B05627A	Carbon Resistor 330K ERD-25T J	R473,477	0B01681A	Carbon Resistor 3.3K ERD-25T J	R539	0B05623A	Carbon Resistor 1.2K ERD-25T J	R623	0B09314A	Carbon Resistor 5.1K ERD-25T J
403,404			485			R540,550	0B05627A	Carbon Resistor 330K ERD-25T J	R626,627	0B09439A	Metal Film Resistor 20K SN14K2E F
405,406			R478,487	0B01854A	Carbon Resistor 39K ERD-25T J	551,554			C423	0B09398A	Electrolytic Capacitor 6800μ 16V
407,408			R480,499	0B05508A	Carbon Resistor 56K ERD-25T J	555,567			C425	0B01406A	Electrolytic Capacitor 2200μ 16V
409,410			R483,484	0B01857A	Carbon Resistor 1K ERD-25T J	608,629			C426	0B09374A	Electrolytic Capacitor 6800μ 25V
411,412			508			R541	0B05508A	Carbon Resistor 56K ERD-25T J	C427	0B05654A	Electrolytic Capacitor 2200μ 25V
416,417			R489	0B05640A	Carbon Resistor 180K ERD-25T J	R542	0B01888A	Carbon Resistor 10K ERD-25T J	C472,473	0B01272A	Electrolytic Capacitor 100μ 25V
418,419			R492	0B05680A	Carbon Resistor 1.8M ERD-25T J	R543,545	0B05509A	Carbon Resistor 33K ERD-25T J	-- Miscellaneous --		
421,422			R495,500	0B05692A	Carbon Resistor 68K ERD-25T J	568,569			0B07987C	Logic P.C.B.	
423,424			501			571			0E00860A	BT Screw M3x6 Philips Binding Head	(2 pcs.)
425,429			R496	0B01887A	Carbon Resistor 5.6K ERD-25T J	R544,562	0B01857A	Carbon Resistor 1K ERD-25T J	0E00896A	Screw M3x6 Philips Binding Head	(Chromate)
430,434			R497	0B09320A	Carbon Resistor 820K ERD-25T J	R547	0B05671A	Carbon Resistor 2.2M ERD-25T J	0E00507A	Nut Hex. M3	(2 pcs.)
435,436			R512	0B09580A	Fail Safe Type Resistor 2.4RDF-25S J	R548	0B05615A	Carbon Resistor 22K ERD-25T J	QJ04408B	Heat Sink C	(1 pce.)
440,441			R518	0B09217A	Fail Safe Type Resistor 5.6RDF-25S J	R552,553	0B05776A	Carbon Resistor 1M ERD-25T J			
442,447			R519	0B05794A	Carbon Resistor 680 ERD-25T J	558					
448,449			R524	0B05621A	Carbon Resistor 120K ERD-25T J	R560	0B05625A	Carbon Resistor 220K ERD-25T J			
450,457			R526	0B05560A	Carbon Resistor 18K ERD-25T J	R565,566	0B05676A	Carbon Resistor 390K ERD-25T J			
458,474			R584	0B01680A	Carbon Resistor 820 ERD-25T J	C431,432	0B05687A	Mylar Capacitor 1200P 50V J			
475,481			R585,586	0B05629A	Carbon Resistor 2.7K ERD-25T J	C433,444	0B01405A	Electrolytic Capacitor 1μ 50V			
482,486			R590	0B09216A	Fail Safe Type Resistor 10 RDF-25S J	446					
513,517			C401	0B01863A	Electrolytic Capacitor 3.3μ 16V	C434	0B01863A	Electrolytic Capacitor 3.3μ 16V			
520,522			C402,403	0B05556A	Mylar Capacitor 4700P 50V	C435	0B05557A	Mylar Capacitor 0.015μ 50V J			
R413,466	0B05509A	Carbon Resistor 33K ERD-25T J	405,406			C436	0B05622A	Mylar Capacitor 4700P 50V J			
476,507			C404	0B05582A	Mylar Capacitor 0.022μ 50V J	C437	0B09222A	Electrolytic Capacitor 0.47μ 50V (LN)			
607			C407	0B00093A	Mylar Capacitor 0.1μ 50V	C438	0B09287A	Ceramic Capacitor 680P 50V K			
R414,437	0B05615A	Carbon Resistor 22K ERD-25T J	C408	0B01405A	Electrolytic Capacitor 1μ 50V	C439	0B00610A	Mylar Capacitor 0.15μ 50V			
451,452			C409	0B09166A	Mylar Capacitor 3300P 50V	C440	0B05583A	Mylar Capacitor 0.033μ 50V J			
453,454			C410	0B00610A	Mylar Capacitor 0.15μ 50V	C441	0B05682A	Mylar Capacitor 0.068μ 50V J			
455,502			C411,414	0B01676A	Mylar Capacitor 0.056μ 50V	C442,443	0B09144A	Electrolytic Capacitor 0.22μ 50V (LN)			
			C412,413	0B09147A	Electrolytic Capacitor 3.3μ 25V (LN)	C459	0B09187A	Electrolytic Capacitor 1μ 50V (BP)			
			C415,422	0B09223A	Electrolytic Capacitor 1μ 50V (LN)	C461,478	0B01180A	Ceramic Capacitor 330P 50V K			
			C416	0B09333A	Electrolytic Capacitor 4.7μ 25V (LN)						

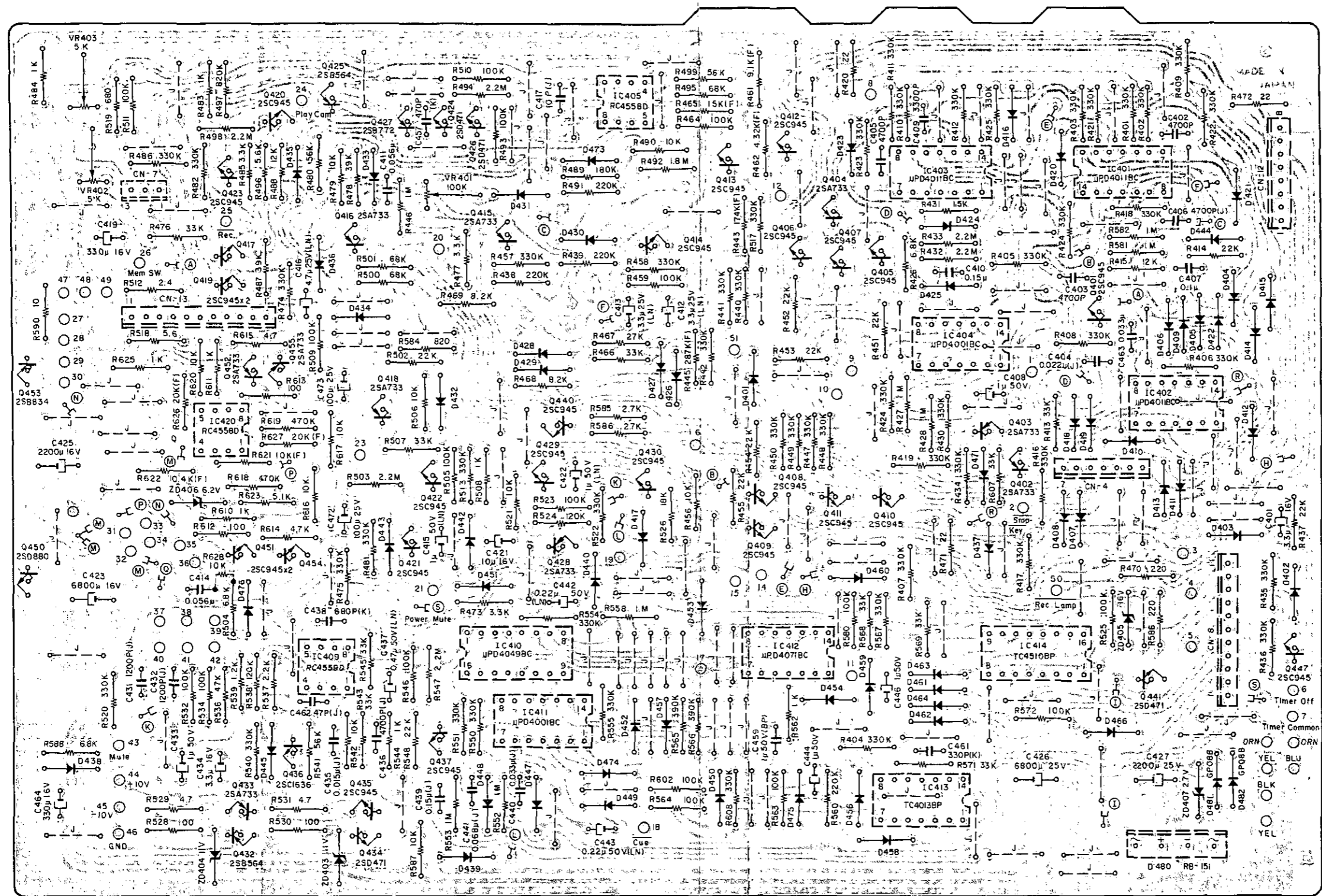


Fig. 7.15.3 Serial Nos.: A12201001 - A12202861

Note: Diode is 1S553 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
	BA04465A	Logic P.C.B. Ass'y Serial Nos.: A12201001 - A12202861	R415,488	0B09263A	Carbon Resistor 12K ERD-25T J	C417	0B09277A	Ceramic Capacitor 10P 50V J	C462	0B09280A	Ceramic Capacitor 47P 50V J
			R420,471	0B09049A	Fail Safe Type Resistor 22 RDF-25S J	C419,464	0B01502A	Electrolytic Capacitor 330μ 16V			
			472			C421	0B01412A	Electrolytic Capacitor 10μ 16V			
			R426,504	0B01682A	Carbon Resistor 6.8K ERD-25T J	C457	0B09286A	Ceramic Capacitor 470P 50V K			
			588			C463	0B05513A	Mylar Capacitor 0.033μ 50V			
IC401,402	0B06178A	IC μPD4011BC	R427,428	0B05776A	Carbon Resistor 1M ERD-25T J	CN4	0B08643A	7P-T Post	IC420	0B06124B	IC RC4558D
403			446,581			CN7	0B08653A	3P-T Post	Q432	0B06069A	Transistor 2SB564
IC404	0B06143A	IC μPD4001BC	582			CN8,13	0B08655A	11P-T Post	Q433,452	0B06013A	Transistor 2SA733
IC405	0B06124B	IC RC4558D	R431	0B05698A	Carbon Resistor 1.5K ERD-25T J	CN12	0B08644A	8P-T Post	Q434,441	0B06066A	Transistor 2SD471
Q401,405	0B06100A	Transistor 2SC945 (A)	R432,433	0B05671A	Carbon Resistor 2.2M ERD-25T J				Q435,451	0B06100A	Transistor 2SC945 (A)
406,407			494,498						454		
408,409			503						Q450	0B06255A	Transistor 2SD880 (Y)
410,411			R438,439	0B05625A	Carbon Resistor 220K ERD-25T J	IC409	0B06127A	IC RC4559D	Q453	0B06256A	Transistor 2SB834 (Y)
412,413			491			IC410	0B06250A	IC μPD4049BC	ZD403,404	0B06231A	Zener Diode 11V RD11EB2
414,417			R443	0B09367A	Metal Film Resistor 174K SN14K2E F	IC411	0B06143A	IC μPD4001BC	ZD405	0B06154A	Zener Diode 16V RD16EB3
419,420			R445	0B09366A	Metal Film Resistor 287K SN14K2E F	IC412	0B06214A	IC μPD4071BC	ZD406	0B06167A	Zener Diode 6.2V RD6.2EB3
421,422			R456,479	0B01888A	Carbon Resistor 10K ERD-25T J	IC413	0B06213A	IC TC4013BP	ZD407	0B06191A	Zener Diode 2.7V 2.7EB
423,429			490,506			IC414	0B06212A	IC TC4510BP	D480	0B06183A	Diode Bridge RB151
430,440			521,587			Q436	0B06070A	Transistor 2SC1636	D481,482	0B06109A	Silicon Diode GP08B
447			628			Q437	0B06100A	Transistor 2SC945 (A)	R528,530	0B09215A	Fail Safe Type Resistor 100 RDF-25S J
Q402,403	0B06013A	Transistor 2SA733	R459,464	0B01889A	Carbon Resistor 100K ERD-25T J	D445	0B06181A	Silicon Diode 1SS53 (21 pcs.)	R529,531	0B09321A	Fail Safe Type Resistor 4.7 RDF-25S J
404,415			493,505						R586	0B05930A	Fail Safe Type Resistor 220 RDF-25S J
416,418			509,510						R610,611	0B01857A	Carbon Resistor 1K ERD-25T J
428			511,523						625		
Q424,426	0B06066A	Transistor 2SD471	525,580						R612,613	0B01679A	Carbon Resistor 100 ERD-25T J
Q425	0B06069A	Transistor 2SB564	R461	0B09328A	Metal Film Resistor 9.1K SN14K2E F	R532,534	0B01889A	Carbon Resistor 100K ERD-25T J	R614,615	0B01846A	Carbon Resistor 4.7K ERD-25T J
Q427	0B06303A	Transistor 2SB772	R462	0B09365A	Metal Film Resistor 4.32K SN14K2E F	546,563			R616,617	0B01888A	Carbon Resistor 10K ERD-25T J
D401-440	0B01909A	Silicon Diode 1S1555 (46 pcs.)	R465	0B09340A	Metal Film Resistor 15K SN14K2E F	564,572			620		
442,443			R467	0B05743A	Carbon Resistor 27K ERD-25T J	602			R618,619	0B01684A	Carbon Resistor 470K ERD-25T J
444,471			R468,469	0B01856A	Carbon Resistor 8.2K ERD-25T J	R536	0B05641A	Carbon Resistor 47K ERD-25T J	R621	0B09203A	Metal Film Resistor 10K SN14K2E F
473,476			R470	0B01933A	Carbon Resistor 220 ERD-25T J	R537	0B05622A	Carbon Resistor 2.2K ERD-25T J	R622	0B09433A	Metal Film Resistor 10.4K SN14K2E F
VR401	0B03832A	Semi-fixed Volume 100K	R473,477	0B01681A	Carbon Resistor 3.3K ERD-25T J	R538	0B05612A	Carbon Resistor 120K ERD-25T J	R623	0B09314A	Carbon Resistor 5.1K ERD-25T J
VR402,403	0B03831A	Semi-fixed Volume 5K	485			R539	0B05623A	Carbon Resistor 1.2K ERD-25T J	R626,627	0B09439A	Metal Film Resistor 20K SN14K2E F
R401,402	0B05627A	Carbon Resistor 330K ERD-25T J	R478,487	0B01854A	Carbon Resistor 39K ERD-25T J	R540,550	0B05627A	Carbon Resistor 330K ERD-25T J	C423	0B09398A	Electrolytic Capacitor 6800μ 16V
403,404			R480,499	0B05508A	Carbon Resistor 56K ERD-25T J	551,554			C425	0B01406A	Electrolytic Capacitor 2200μ 16V
405,406			R483,484	0B01857A	Carbon Resistor 1K ERD-25T J	555,567			C426	0B09374A	Electrolytic Capacitor 6800μ 25V
407,408			508			608			C427	0B05654A	Electrolytic Capacitor 2200μ 25V
409,410			R489	0B05640A	Carbon Resistor 180K ERD-25T J	R541	0B05508A	Carbon Resistor 56K ERD-25T J	C472,473	0B01272A	Electrolytic Capacitor 100μ 25V
411,412			R492	0B05680A	Carbon Resistor 1.8M ERD-25T J	R542	0B01888A	Carbon Resistor 10K ERD-25T J			
416,417			R495,500	0B05692A	Carbon Resistor 68K ERD-25T J	R543,545	0B05509A	Carbon Resistor 33K ERD-25T J			
418,419			501			568,569					
421,422			R496	0B01887A	Carbon Resistor 5.6K ERD-25T J	571					
423,424			R497	0B09320A	Carbon Resistor 820K ERD-25T J	R544,562	0B01857A	Carbon Resistor 1K ERD-25T J			
425,429			R512	0B09580A	Fail Safe Type Resistor 2.4RDF-25S J	R547	0B05671A	Carbon Resistor 2.2M ERD-25T J			
430,434			R518	0B09217A	Fail Safe Type Resistor 5.6RDF-25S J	R548	0B05615A	Carbon Resistor 22K ERD-25T J			
435,436			R519	0B05794A	Carbon Resistor 680 ERD-25T J	R552,553	0B05776A	Carbon Resistor 1M ERD-25T J			
440,441			R524	0B05621A	Carbon Resistor 120K ERD-25T J	558					
442,447			R526	0B05560A	Carbon Resistor 18K ERD-25T J	R560	0B05625A	Carbon Resistor 220K ERD-25T J			
448,449			R584	0B01680A	Carbon Resistor 820 ERD-25T J	R565,566	0B05676A	Carbon Resistor 390K ERD-25T J			
450,457			R585,586	0B05629A	Carbon Resistor 2.7K ERD-25T J	C431,432	0B05687A	Mylar Capacitor 1200P 50V J			
458,474			R590	0B09216A	Fail Safe Type Resistor 10 RDF-25S J	C433,444	0B01405A	Electrolytic Capacitor 1μ 50V			
475,481			C401	0B01863A	Electrolytic Capacitor 3.3μ 16V	446					
482,486			C402,403	0B05556A	Mylar Capacitor 4700P 50V	C434	0B01863A	Electrolytic Capacitor 3.3μ 16V			
513,517			405,406			C435	0B05557A	Mylar Capacitor 0.015μ 50V J			
520,522			C404	0B05582A	Mylar Capacitor 0.022μ 50V J	C436	0B05622A	Mylar Capacitor 4700P 50V J			
R413,466	0B05509A	Carbon Resistor 33K ERD-25T J	C407	0B00093A	Mylar Capacitor 0.1μ 50V	C437	0B09222A	Electrolytic Capacitor 0.47μ 50V (LN)			
476,507			C408	0B01405A	Electrolytic Capacitor 1μ 50V	C438	0B09287A	Ceramic Capacitor 680P 50V K			
607			C409	0B09166A	Mylar Capacitor 3300P 50V	C439	0B00610A	Mylar Capacitor 0.15μ 50V			
R414,437	0B05615A	Carbon Resistor 22K ERD-25T J	C410	0B00610A	Mylar Capacitor 0.15μ 50V	C440	0B05583A	Mylar Capacitor 0.033μ 50V J			
451,452			C411,414	0B01676A	Mylar Capacitor 0.056μ 50V	C441	0B05682A	Mylar Capacitor 0.068μ 50V J			
453,454			C412,413	0B09147A	Electrolytic Capacitor 3.3μ 25V (LN)	C442,443	0B09144A	Electrolytic Capacitor 0.22μ 50V (LN)			
455,502			C415,422	0B09223A	Electrolytic Capacitor 1μ 50V (LN)	C459	0B09187A	Electrolytic Capacitor 1μ 50V (BP)			
			C416	0B09333A	Electrolytic Capacitor 4.7μ 25V (LN)	C461	0B01180A	Ceramic Capacitor 330P 50V K			

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

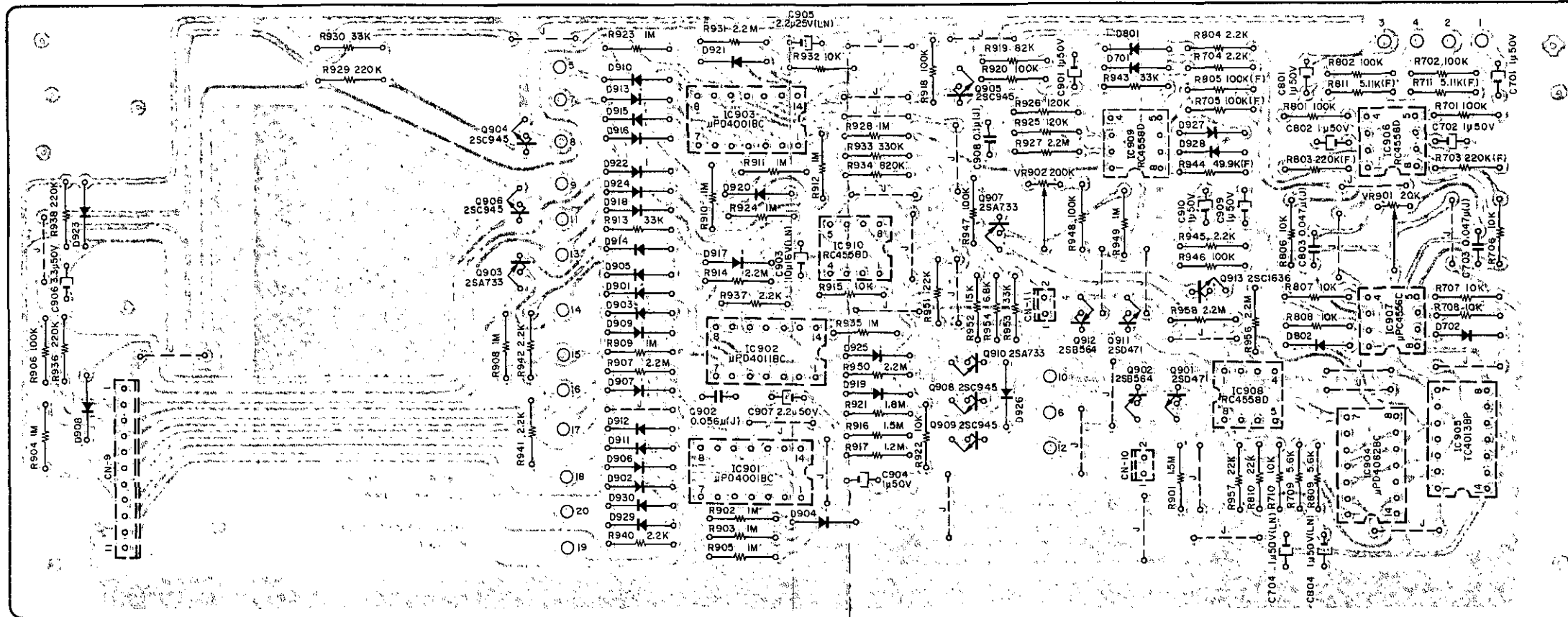


Fig. 7.16

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
			947,948			927,931			C907	0B09372A	Electrolytic Capacitor 2.2μ 50V
	0B07984A	Auto Level P.C.B.	R703,803	0B09472A	Metal Film Resistor 220K SN14K2E F	950,956			C908	0B01780A	Mylar Capacitor 0.1μ 50V J
IC901,903	0B06302A	IC μPD4001BC	R704,804	0B05622A	Carbon Resistor 2.2K ERD-25T J	958			CN9	0B08655A	11P-T Post
IC902	0B06178A	IC μPD4011BC	941,942			R913,930	0B05509A	Carbon Resistor 33K ERD-25T J	CN10,11	0B08656A	2P-T Post
IC904	0B06307A	IC μPD4082BC	945			943,953				0E00857A	BT Screw M3x6 Philips Binding Head (3 pcs.)
IC905	0B06213A	IC TC4013BP	R705,805	0B09305A	Metal Film Resistor 100K SN14K2E F	R917	0B05962A	Carbon Resistor 1.2M ERD-25T J		0J04399A	Cal. P.C.B. Holder (1 pce.)
IC906,908	0B06124B	IC RC4558D	R706,707	0B01888A	Carbon Resistor 10K ERD-25T J	R919	0B05668A	Carbon Resistor 82K ERD-25T J			
909,910			708,710			R921	0B05680A	Carbon Resistor 1.8M ERD-25T J			
IC907	0B06216A	IC μPC4556C	806,807			R925,926	0B05621A	Carbon Resistor 120K ERD-25T J			
Q901,911	0B06066A	Transistor 2SD471	808,915			R929,936	0B05625A	Carbon Resistor 220K ERD-25T J			
Q902,912	0B06069A	Transistor 2SB564	922,932			938					
Q903,907	0B06013A	Transistor 2SA733	R709,809	0B01887A	Carbon Resistor 5.6K ERD-25T J	R933	0B05627A	Carbon Resistor 330K ERD-25T J			
910			R711,811	0B09425A	Metal Film Resistor 5.11K SN14K2E F	R934	0B09320A	Carbon Resistor 820K ERD-25T J			
Q904,905	0B06100A	Transistor 2SC945 (A)	R810,951	0B05615A	Carbon Resistor 22K ERD-25T J	R944	0B09452A	Metal Film Resistor 49.9K SN14K2E F			
906,908			957			R952	0B01683A	Carbon Resistor 15K ERD-25T J			
909			R901,916	0B09380A	Carbon Resistor 1.5M ERD-25T J	R954	0B01682A	Carbon Resistor 6.8K ERD-25T J			
Q913	0B06070A	Transistor 2SC1636	R902,903	0B05776A	Carbon Resistor 1M ERD-25T J	C701,702	0B01405A	Electrolytic Capacitor 1μ 50V			
D701,702	0B06181A	Silicon Diode 1SS53 (34 pcs.)	904,905			801,802					
801,802			908,909			909,910					
901-930			910,911			C703,803	0B05796A	Mylar Capacitor 0.047μ 50V J			
VR901	0B07261A	Semi-fixed Volume 20K	912,923			C704,804	0B09223A	Electrolytic Capacitor 1μ 50V (LN)			
VR902	0B07154A	Semi-fixed Volume 200K	924,928			C902	0B05813A	Mylar Capacitor 0.056μ 50V J			
R701,702	0B01889A	Carbon Resistor 100K ERD-25T J	935,949			C903	0B09148A	Electrolytic Capacitor 10μ 16V (LN)			
801,802						C905	0B09332A	Electrolytic Capacitor 2.2μ 25V (LN)			
906,918											

8. MECHANISM ASS'Y AND PARTS LIST

8.1. Synthesis

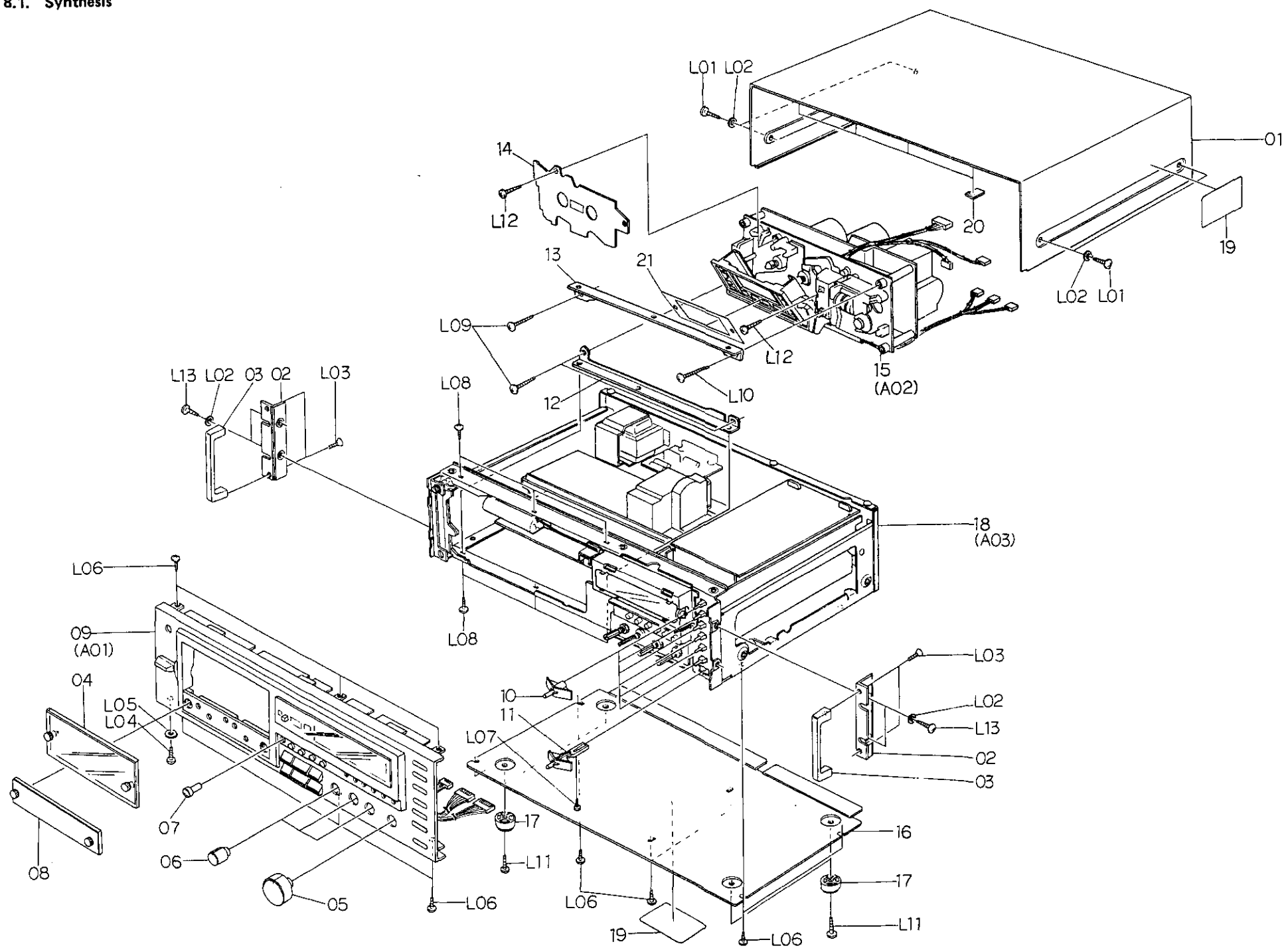


Fig. 8.1

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	0J04158A	Mechanism Holder B	1
13	0J04157A	Mechanism Holder A	1
14	CA08259A	Cover Plate Ass'y	1
15	CA08303A	Mechanism Ass'y 682ZX	1
16	0H03757A	Bottom Cover	1
17	0J03825A	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	0M04101B	Caution Label	2
20	0J04080A	Top Cover Hinge	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)

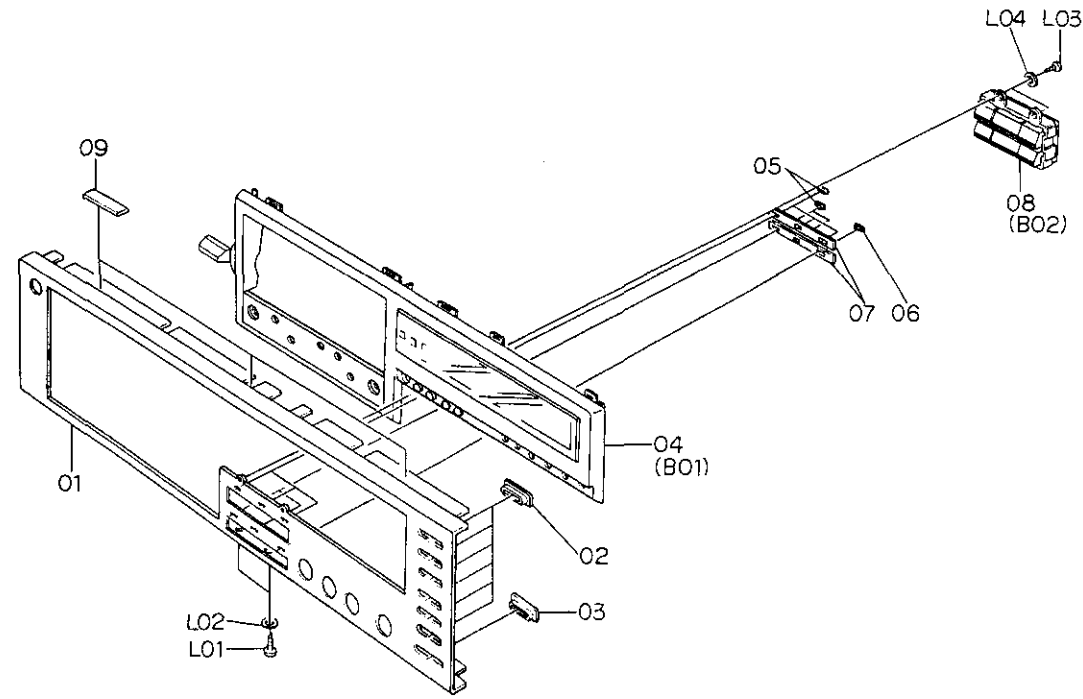


Fig. 8.2

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)

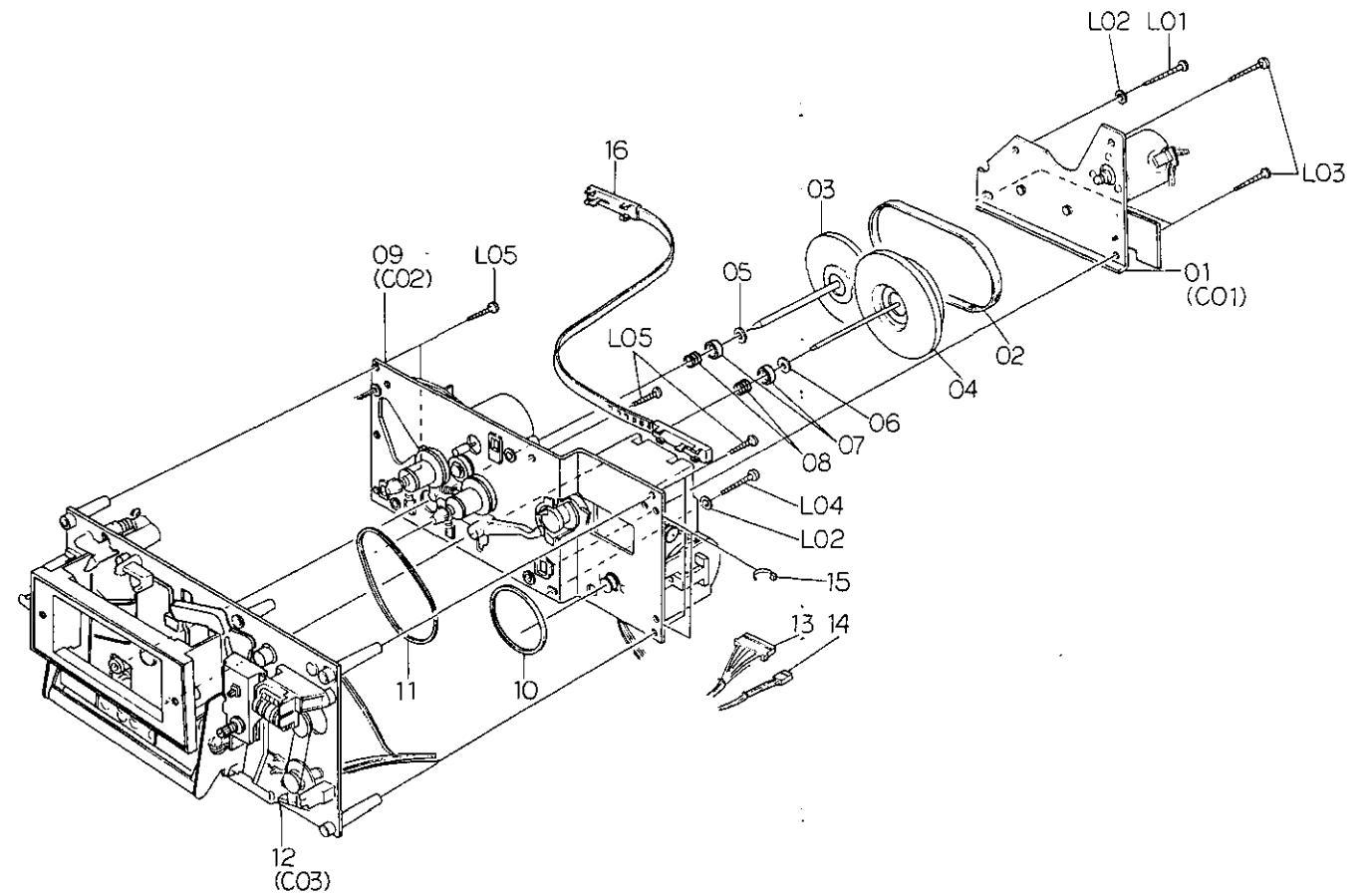


Fig. 8.3

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)

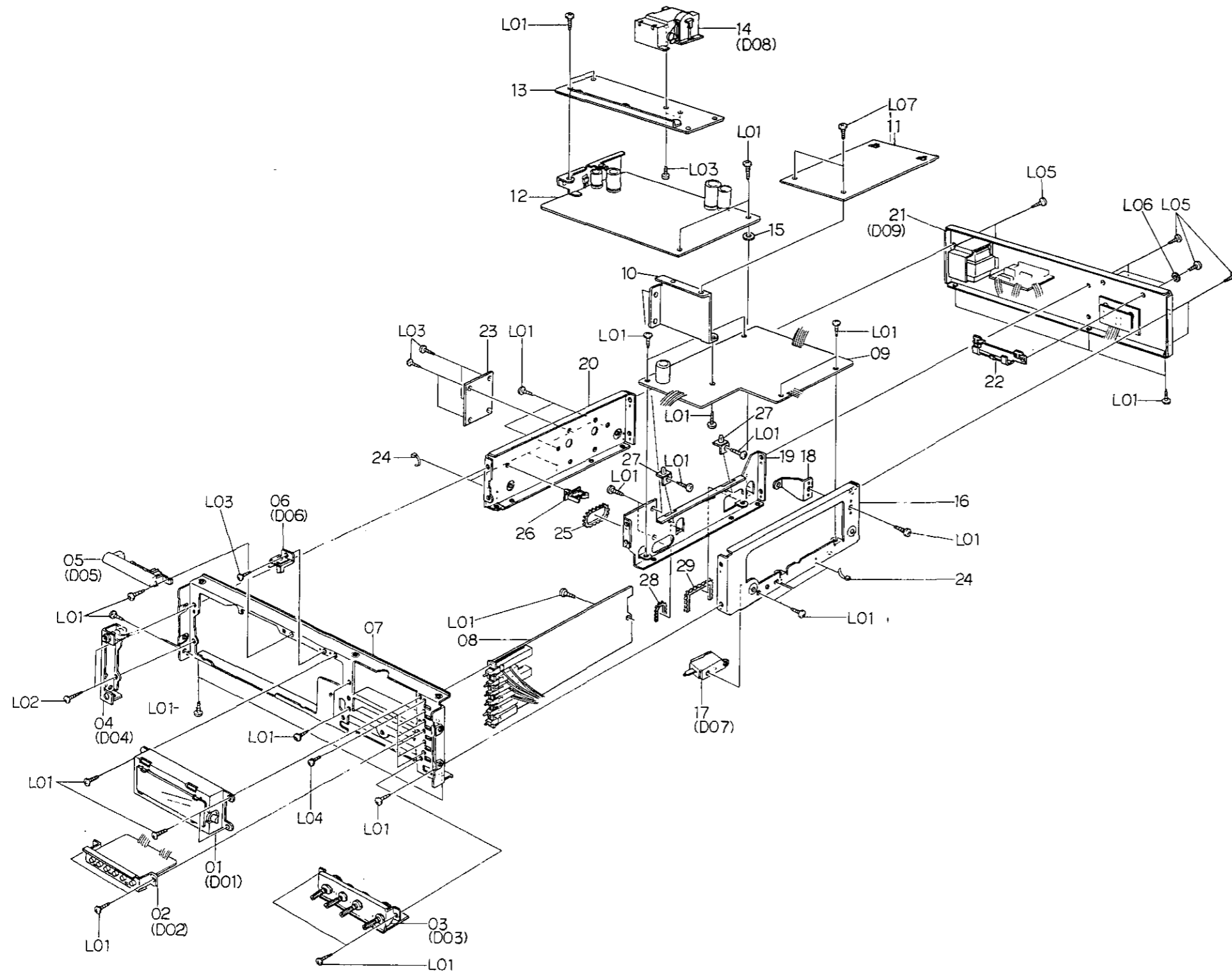


Fig. 8.4

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	0J04034G	Front Chassis	1
08	BA04461A	Switch P.C.B. Ass'y	1
09	BA04463A	Main P.C.B. Ass'y	1
10	0J04409A	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	0J04340A	P.C.B. Stopper Fiber	1
16	0J04033C	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	0J04055B	Switch P.C.B. Holder	1
19	0J04407B	Center Chassis E	1
20	0J04031C	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	0J04448A	Dolby NR P.C.B. Holder B	1
23	0J04421A	Insulator E	2
24	0B08515A	Insu-Lock	23
25	0J04064A	Free Bushing 85mm	1
26	0B08580A	Wire Holder 161	1
27	0B08771A	Hinge	2
28	0J04436A	Free Bushing 52mm	1
29	0J04449A	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)

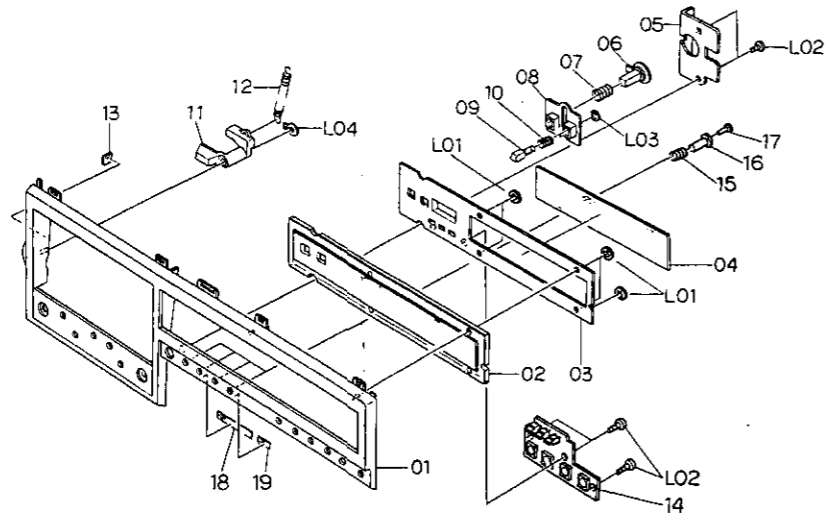


Fig. 8.5

8.6. Control Button Ass'y (B02)

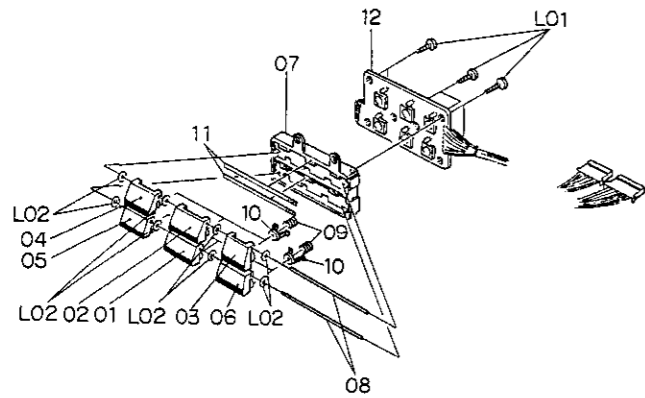


Fig. 8.6

8.7. Flywheel Holder Ass'y (C01)

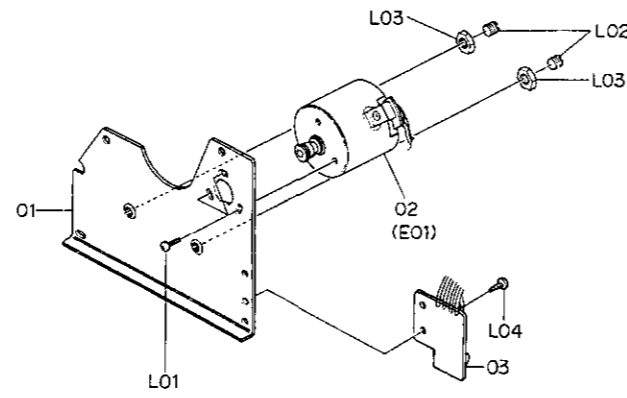


Fig. 8.7

8.8. Sub Mechanism Chassis Ass'y (C02)

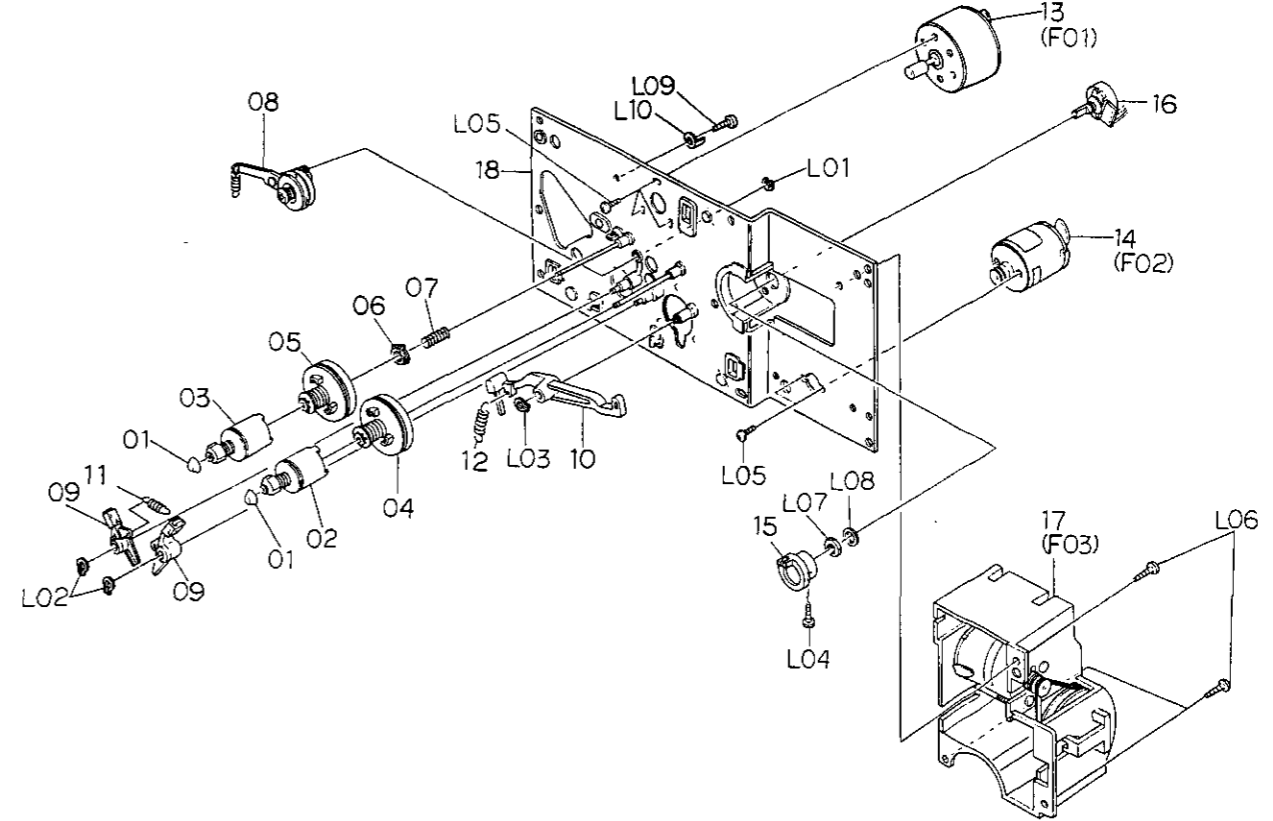


Fig. 8.8

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	QJ04414A	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	QJ04050A	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	QJ04043A	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	QJ04042A	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	QJ04044C	Control Button Holder	1
13	QJ04057B	Eject Lever Cushion	1	08	QJ04045B	Control Button Shaft	2
14	BA04466A	Calibration Indicator P.C.B. Ass'y	1	09	QJ04046A	Control Button Spring	6
15	QJ04412B	Calibration Knob Spring	4	10	QJ04052B	Spring Stopper	6
16	0H03984B	Calibration Knob	4	11	QJ04099A	Control Button Himelon	2
17	QJ04435A	Calibration Knob A	4				
18	QJ04413A	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	QJ04061A	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	0C08013I	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)

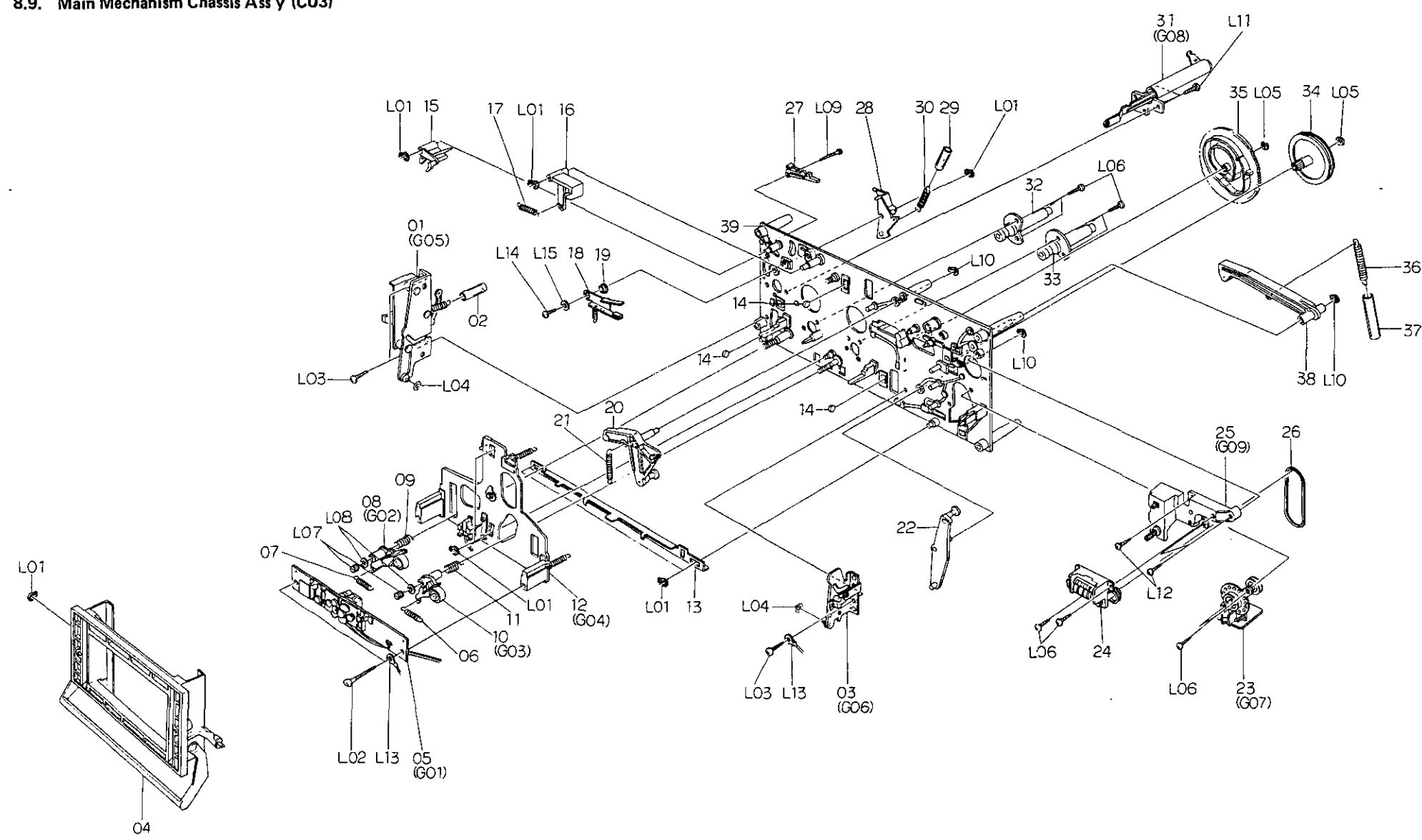


Fig. 8.9

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)

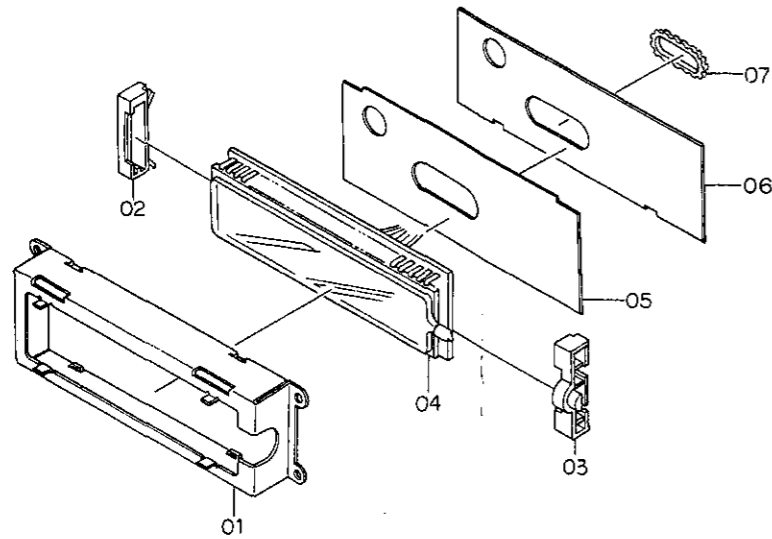


Fig. 8.10

8.11. Bias Calibration Ass'y (D02)

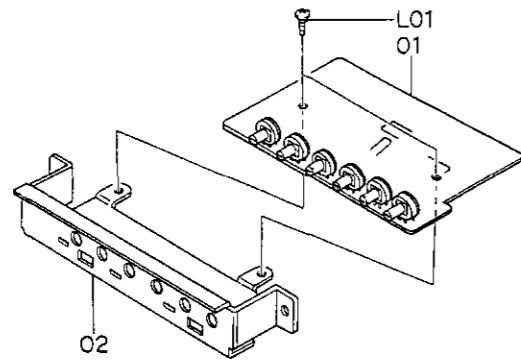


Fig. 8.11

8.12. Volume Holder Ass'y (D03)

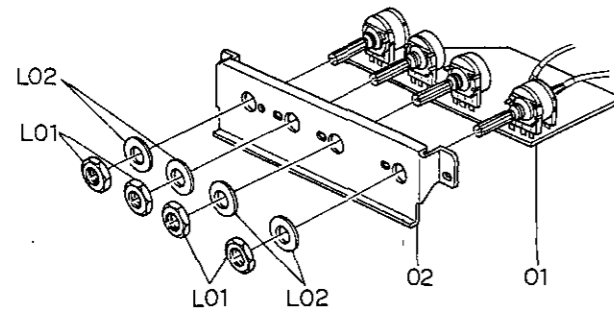


Fig. 8.12

8.13. Headphone Jack Ass'y (D04)

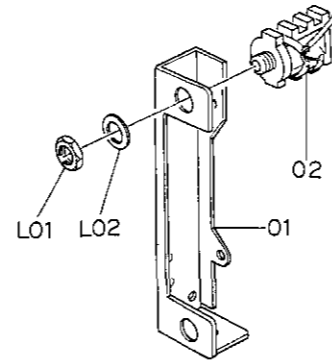


Fig. 8.13

8.14. Reflector Ass'y (D05)

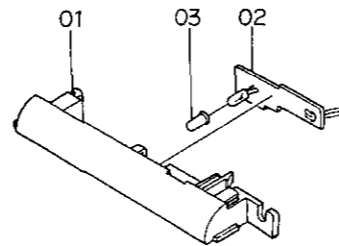


Fig. 8.14

8.15. Counter Lamp Ass'y (D06)

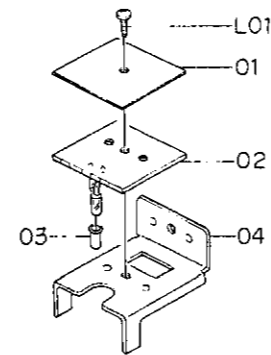


Fig. 8.15

8.16. Power Switch Holder Ass'y (D07)

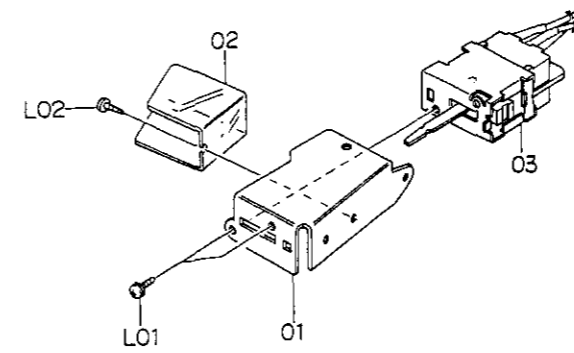


Fig. 8.16

8.17. Auto Level Motor Ass'y (D08)

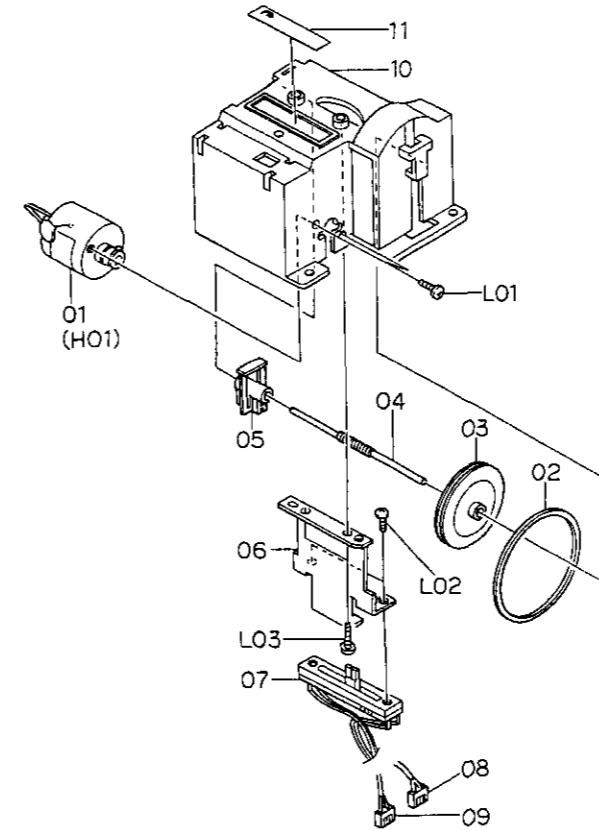


Fig. 8.17

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

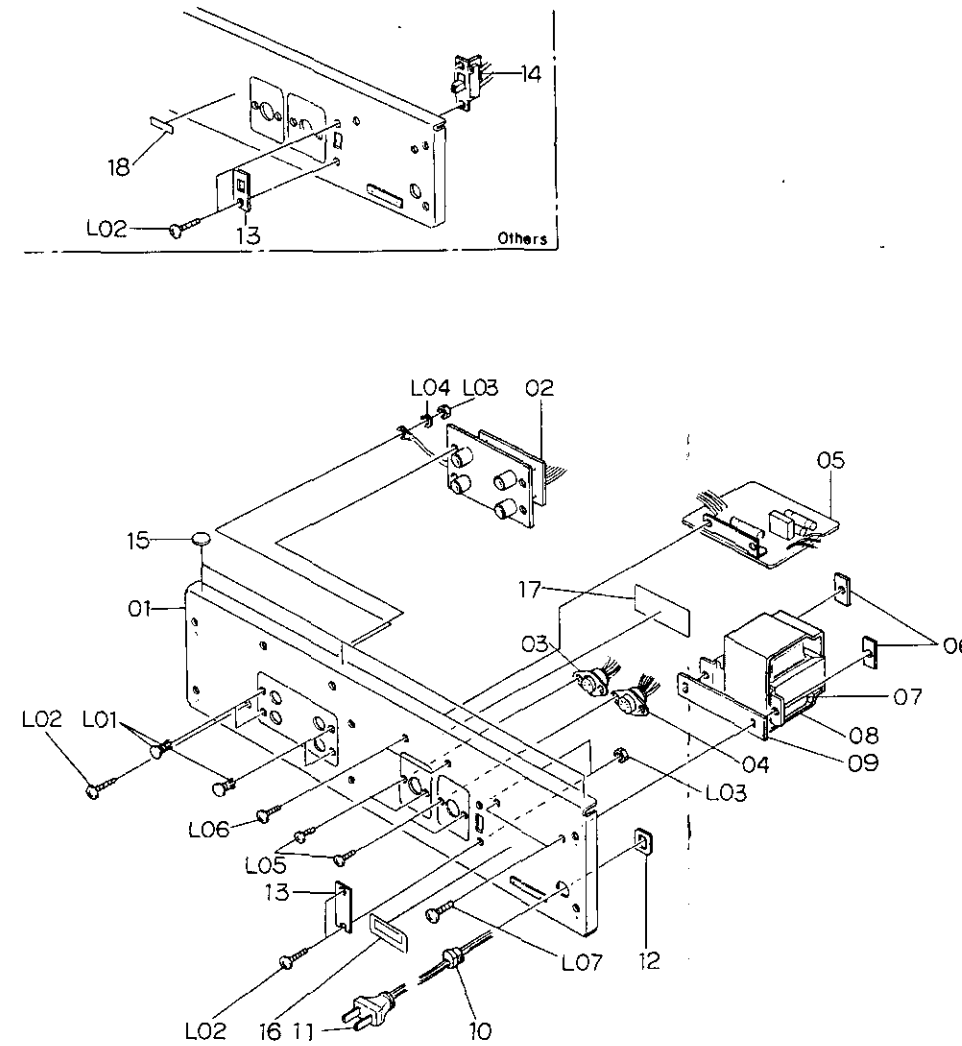


Fig. 8.18

8.19. Capstan Motor Ass'y (E01)

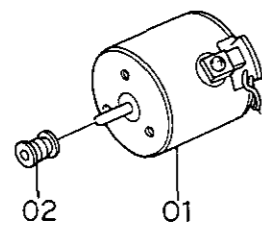


Fig. 8.19

8.20. Reel Motor Ass'y (F01)

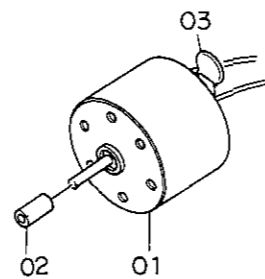


Fig. 8.20

8.21. Control Motor Ass'y (F02)

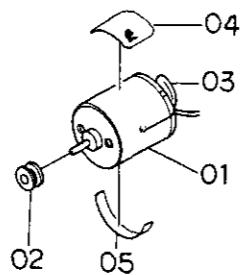


Fig. 8.21

8.22. Azimuth Alignment Motor Ass'y (F03)

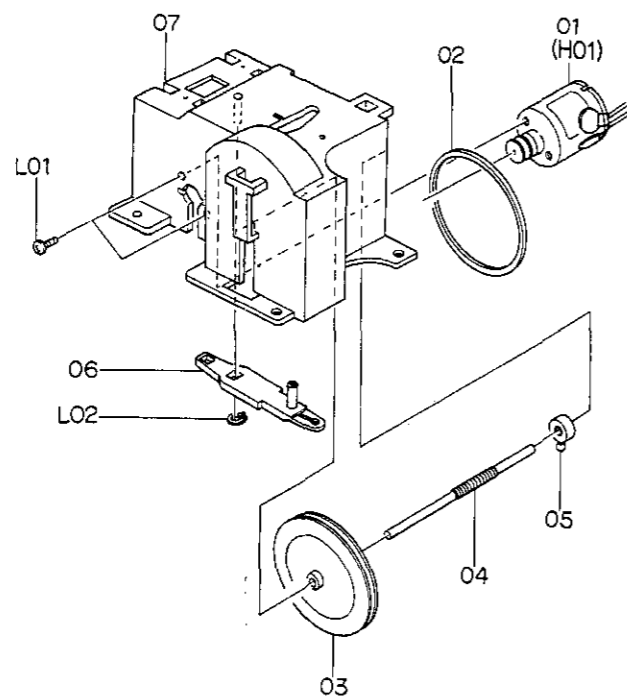


Fig. 8.22

8.23. Head Mount Base Ass'y (G01)

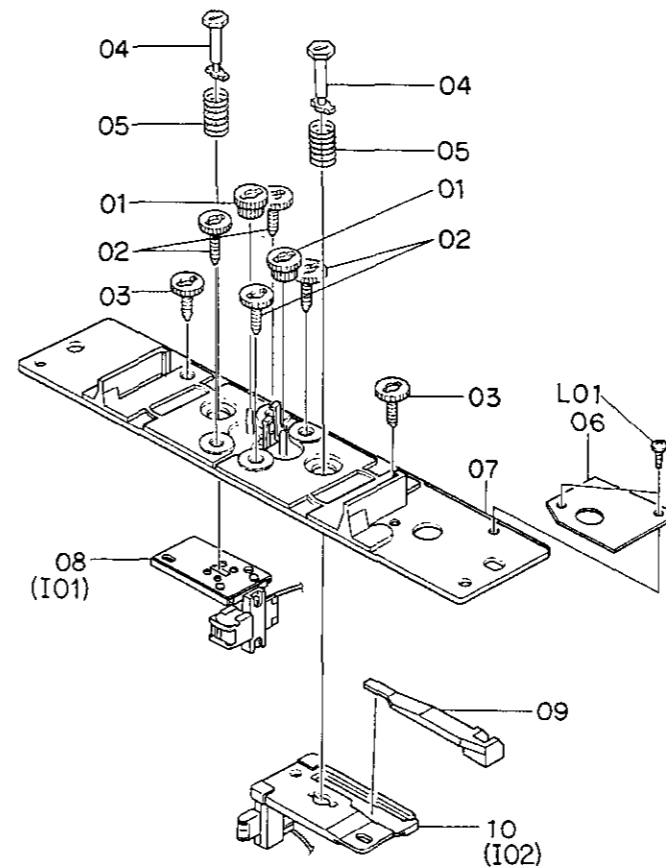


Fig. 8.23

8.24. Supply Pressure Roller Ass'y (G02)

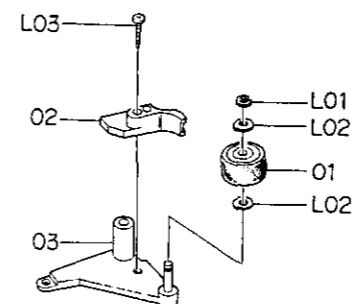


Fig. 8.24

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

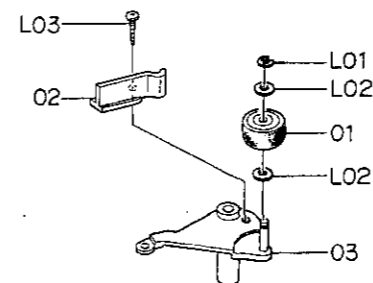


Fig. 8.25

8.26. Head Base Ass'y (G04)

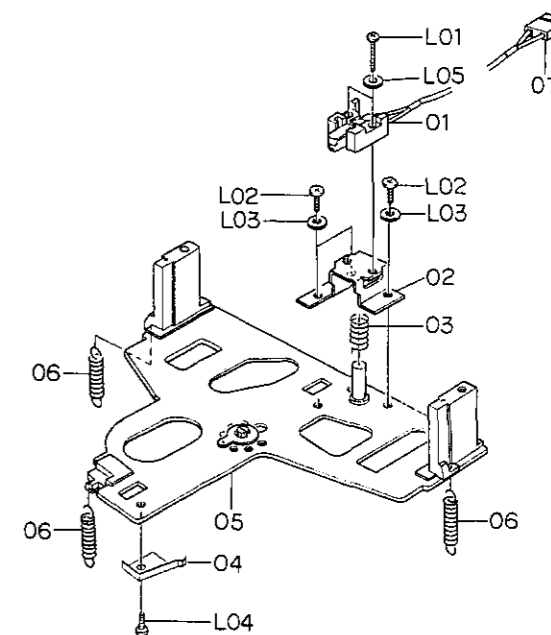


Fig. 8.26

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

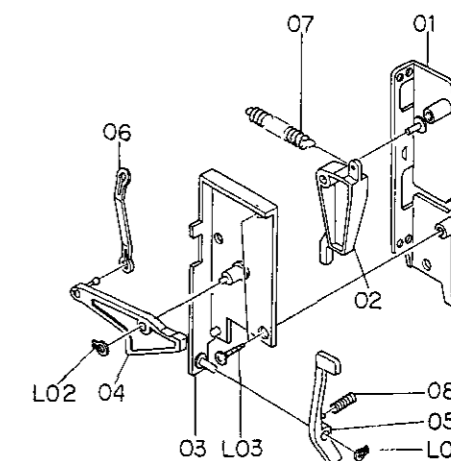


Fig. 8.27

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

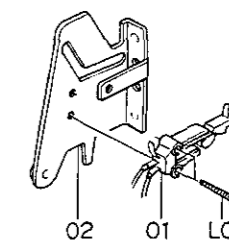


Fig. 8.28

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 0.01μ 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 0.1μ 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)

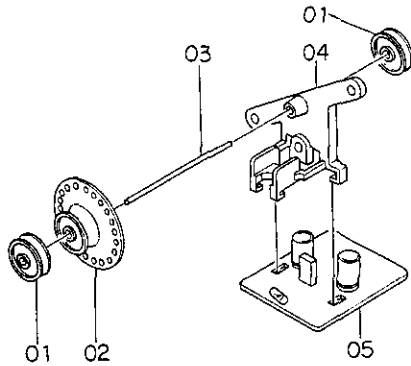


Fig. 8.29

8.30. Pneumatic Damper Ass'y (G08)

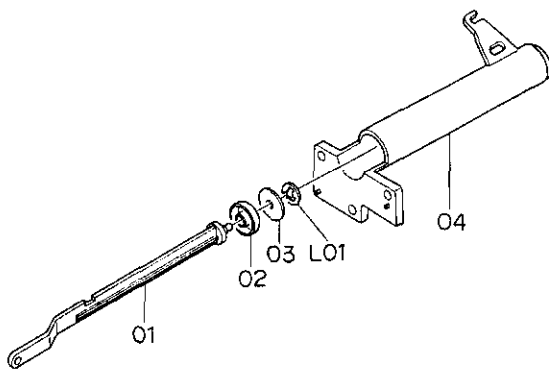


Fig. 8.30

8.31. Pitch Control Holder Ass'y (G09)

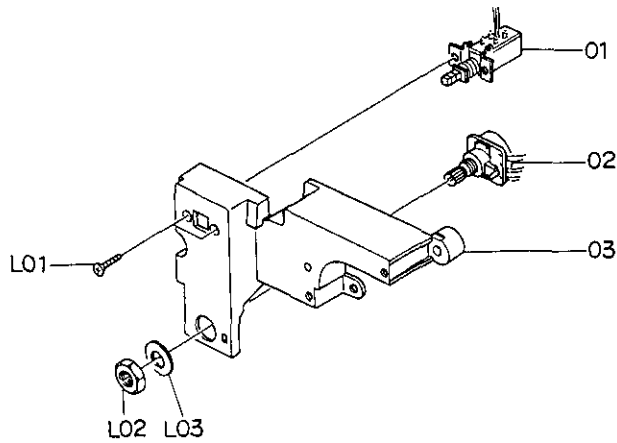


Fig. 8.31

8.32. Azimuth Motor Ass'y (H01)

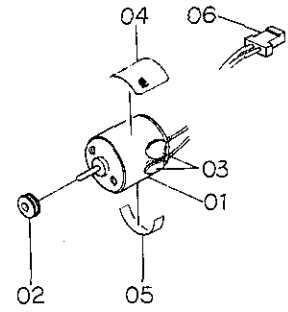


Fig. 8.32

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

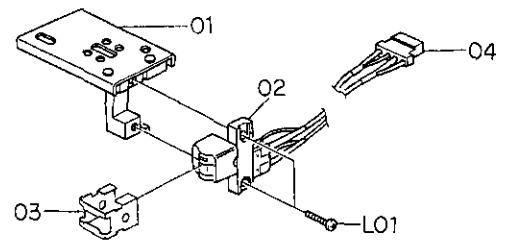


Fig. 8.33

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

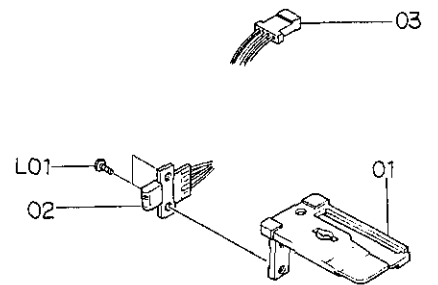


Fig. 8.34

11.2. Mechanism Control Section

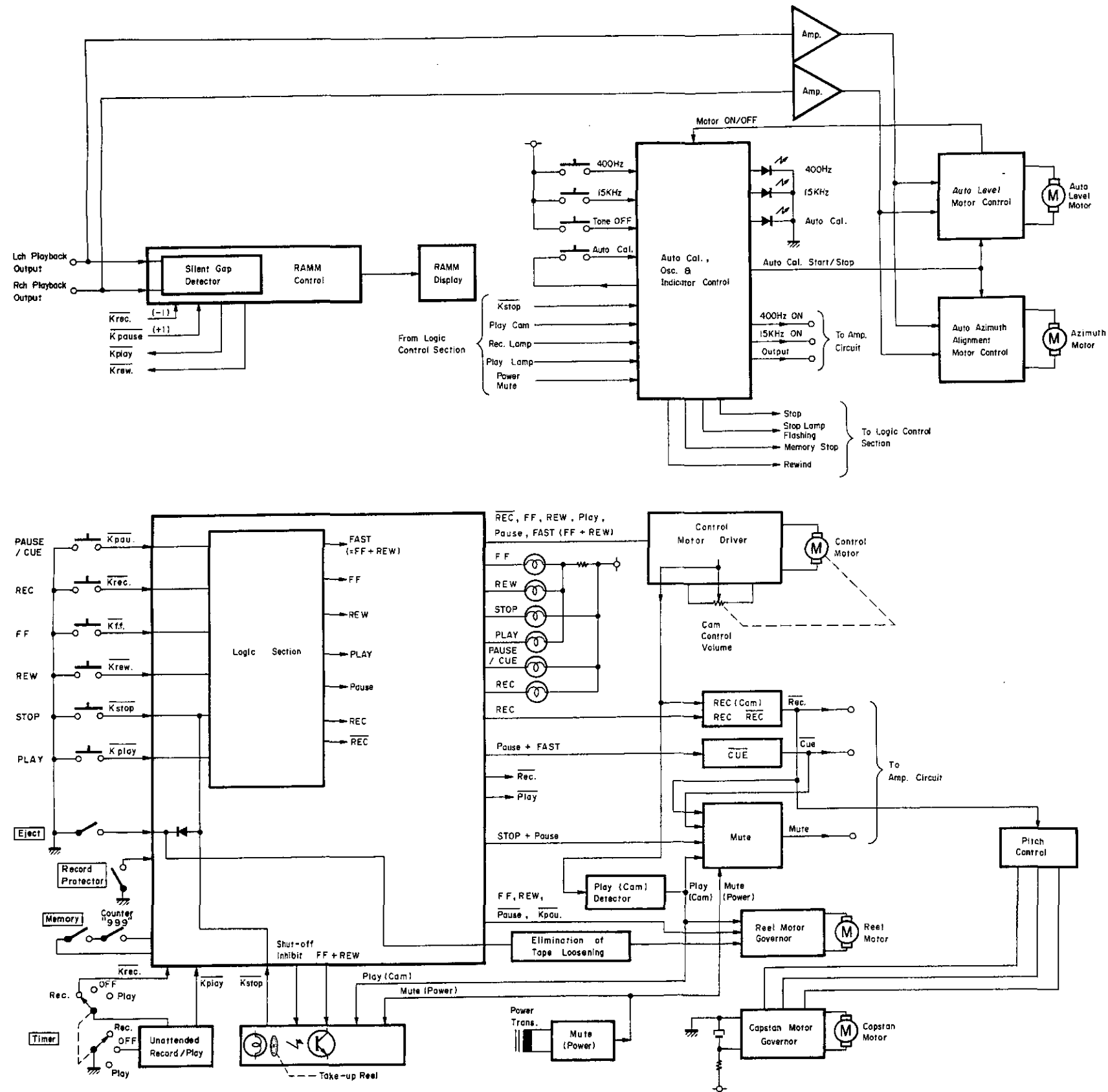


Fig. 11.2

12. WIRING DIAGRAM

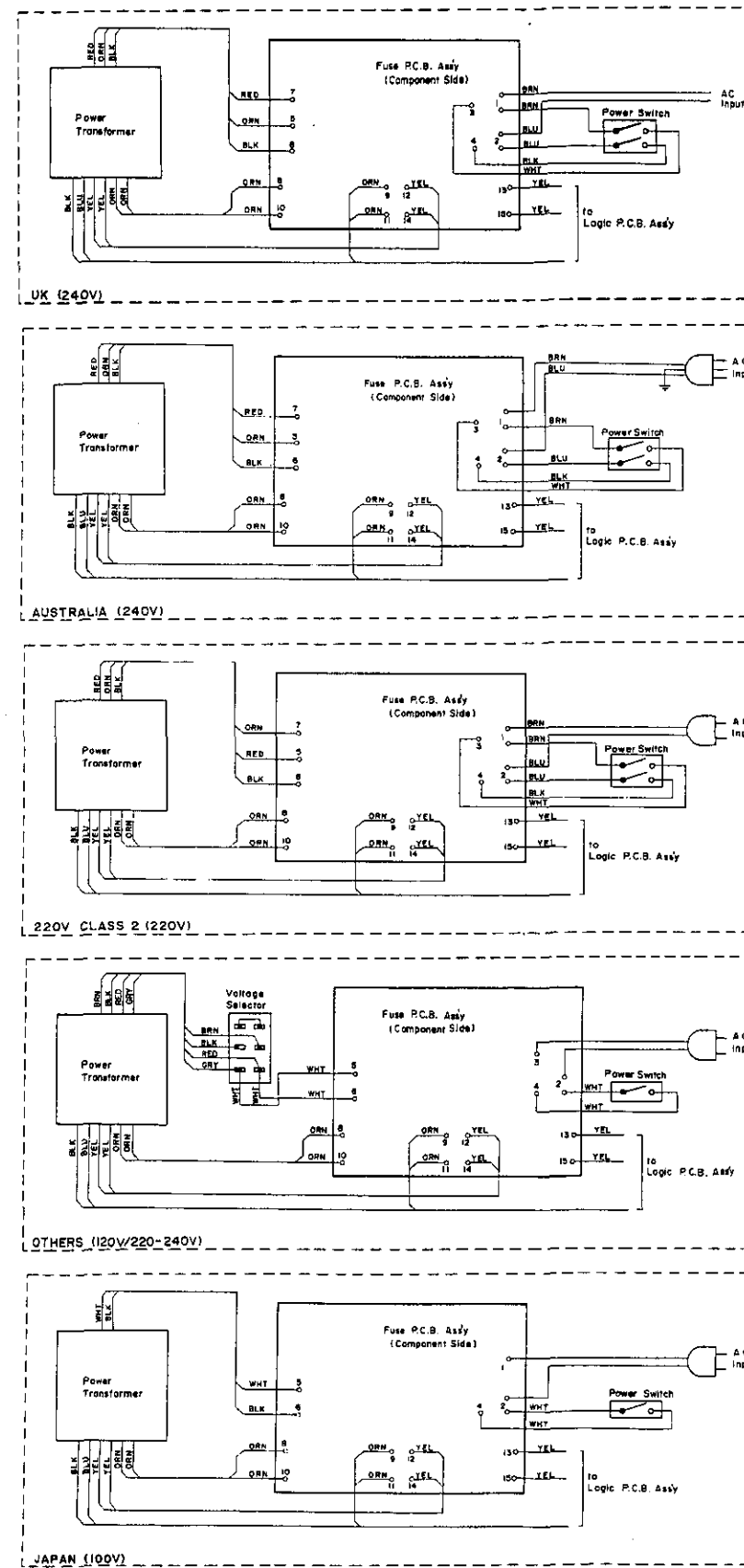


Fig. 12.1

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	OC08047A	Shut-off Pulley A	2	01	OC08137A	Control Motor	1
02	OC08206B	Shut-off Pulley B	1	02	OC08064A	Control Motor Pulley	1
03	OC08210A	Shut-off Pulley Shaft	1	03	OB09292A	Ceramic Capacitor 0.1μ 50V Z	2
04	OC08207B	Shut-off Pulley Holder	1	04	OM03985A	Motor Label 730	1
05	BA04070A	Shut-off P.C.B. Ass'y	1	05	OM03988A	Motor Seal A	1
				06	OB08708A	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	OC08058C	Damper Piston	1	01	CA08307A	Playback Head Plate Ass'y	1
02	OC08102C	Damper Ring	1	02	GA02034A	P-8LH Playback Head	1
03	OC08010C	Damper Plate	1	03	OC08169D	Pad Lifter 54	1
04	OC08059D	Sylinder	1	04	OB08903A	4P-H Connector	1
L01	OE00874A	Stopper Ring CS 2mm	1	L01	OE00886A	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	OB07283A	Memory Switch	1	01	OC08234B	Record Head Plate	1
02	OB07282A	Volume Control 20K (B)	1	02	GA01050A	R-8LH Record Head	1
03	OC08214D	Pitch Control Holder	1	03	OB08904A	4P-H Connector	1
L01	OE00125A	Screw M2x6 Philips Countersunk	2	L01	OE00887A	Screw M1.7x4 Philips Pan Head	2
L02	-	Volume Nut	(1)				
L03	-	Volume Washer	(1)				

9. OVERALL TIMING CHART

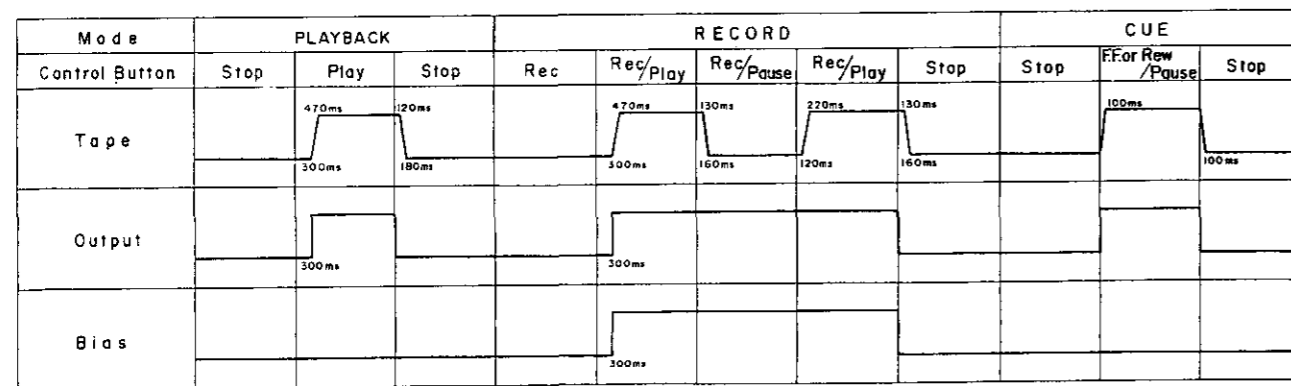


Fig. 9

10.1. Playback Frequency Response

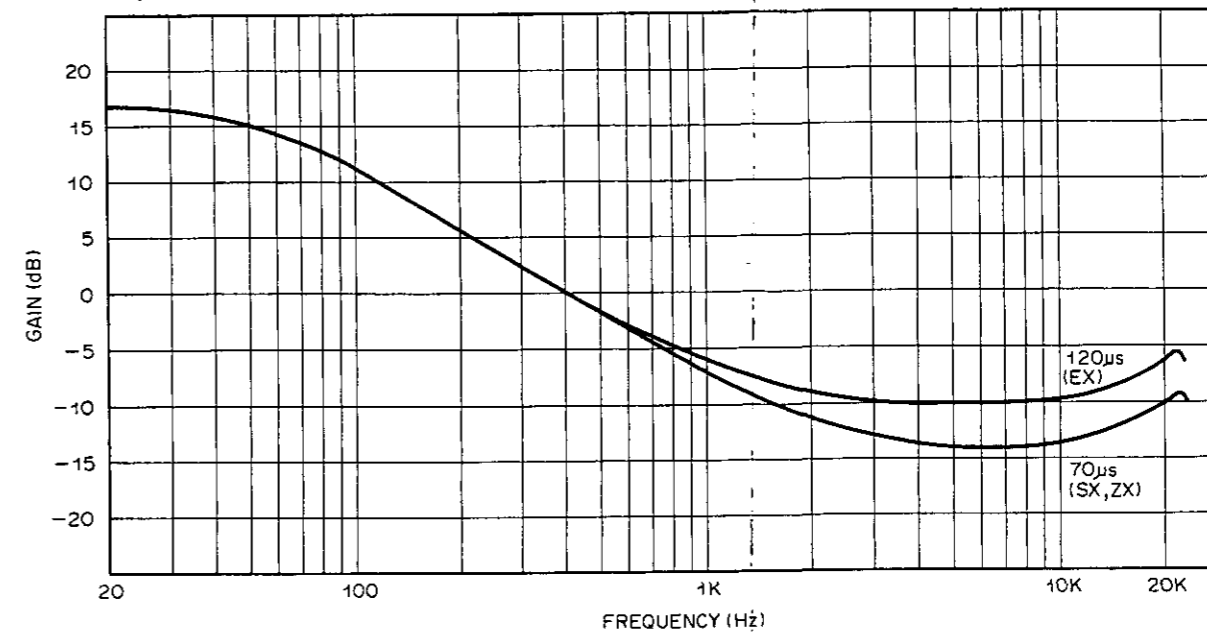


Fig. 10.1

10.2. Record Current Frequency Response

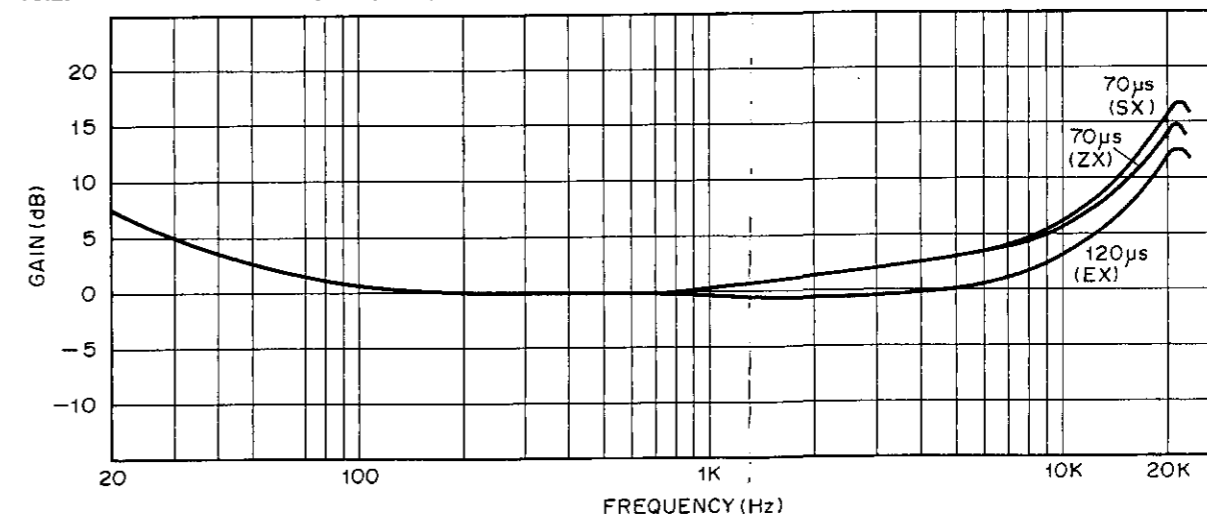


Fig. 10.2

11. BLOCK DIAGRAMS

11.1. Amplifier Section

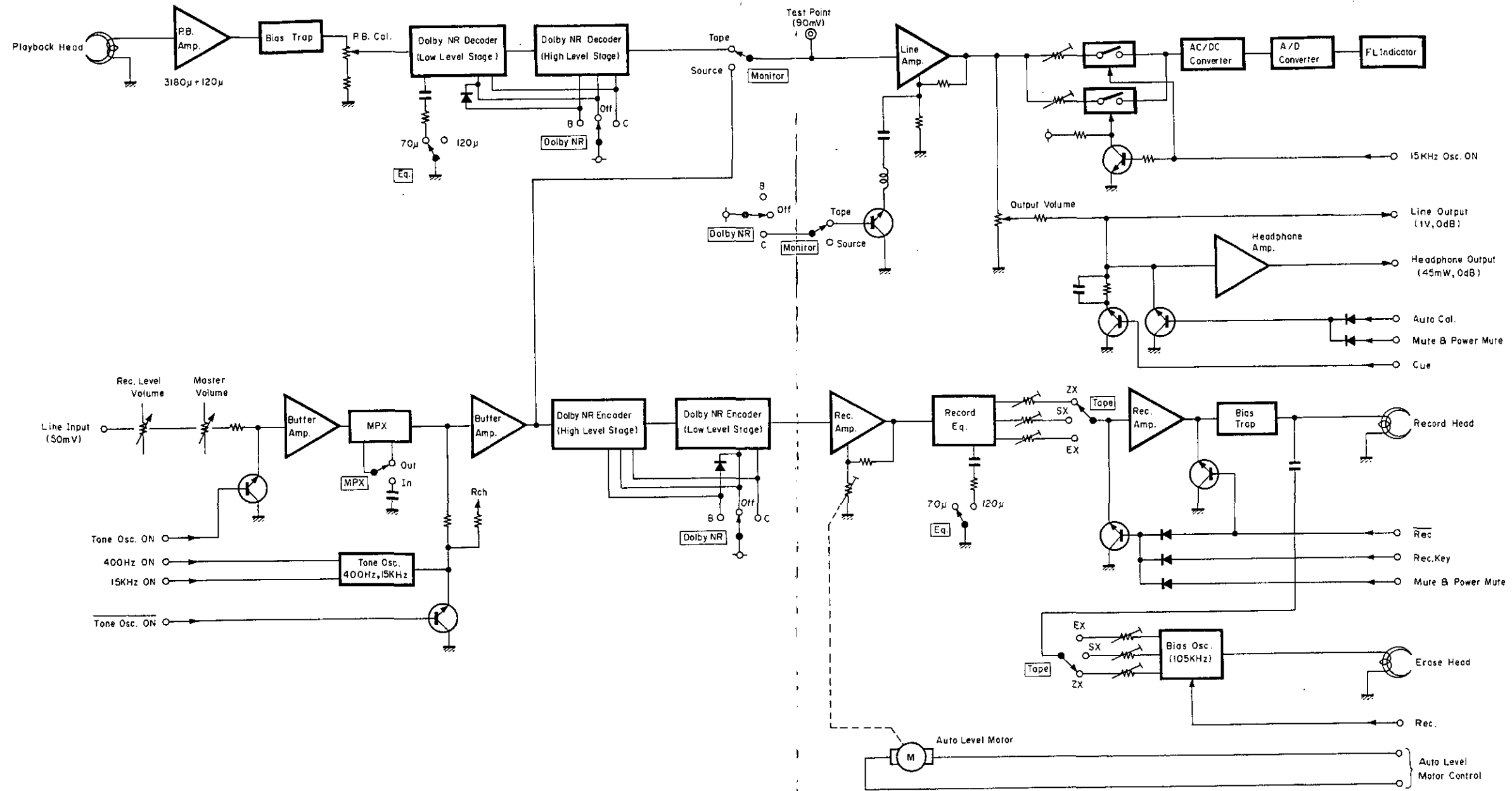


Fig. 11.1

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.

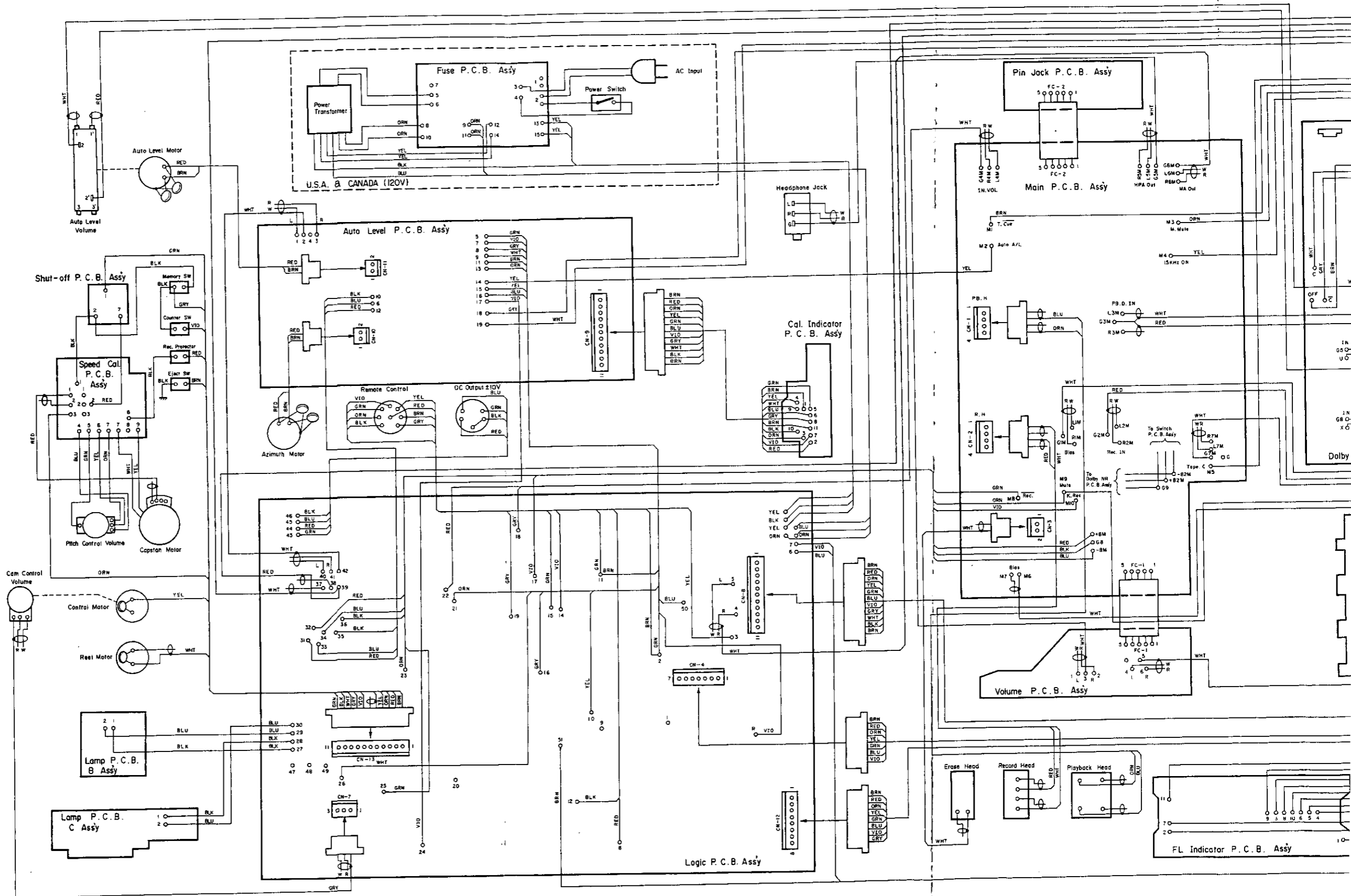


Fig. 12.2

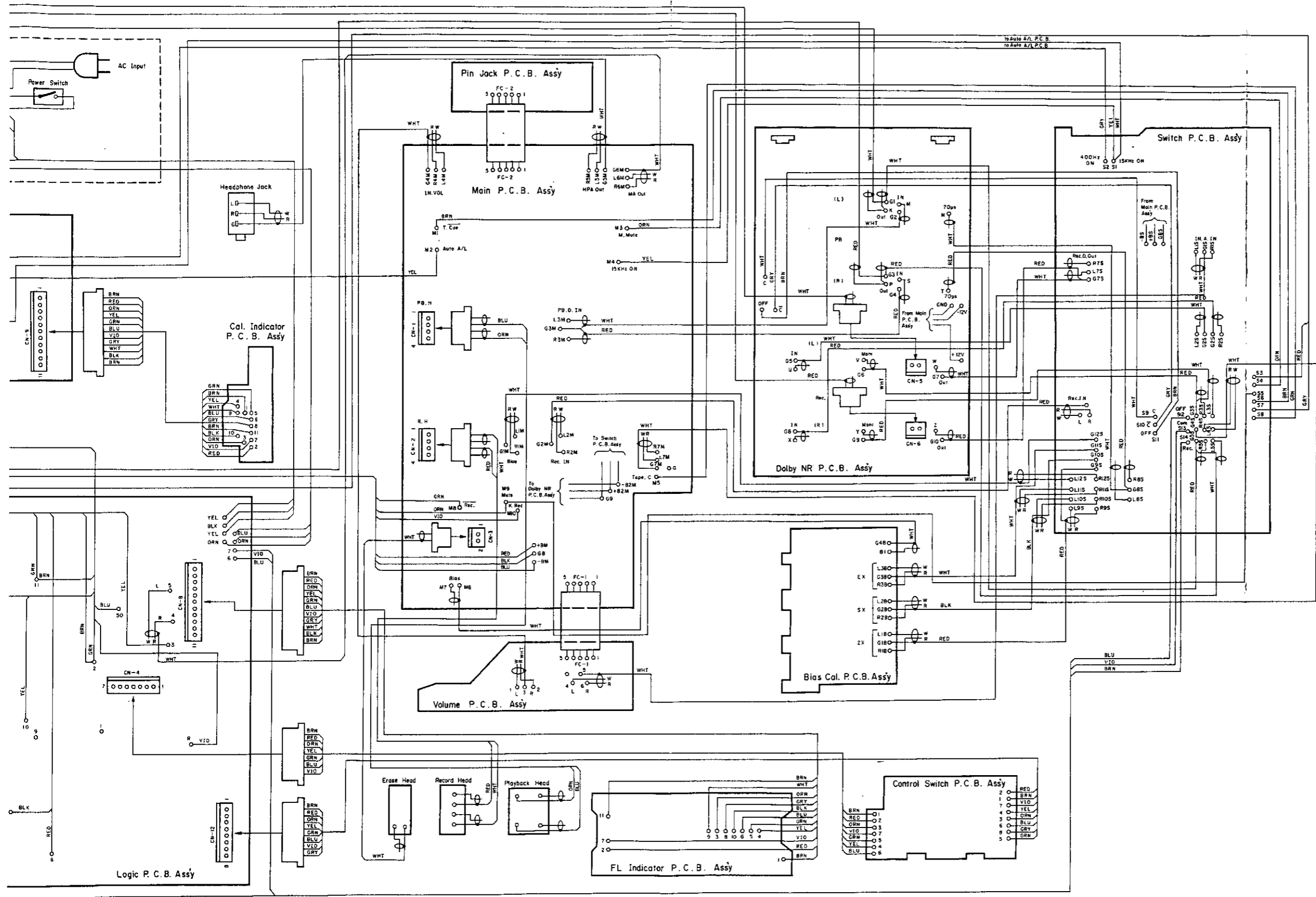
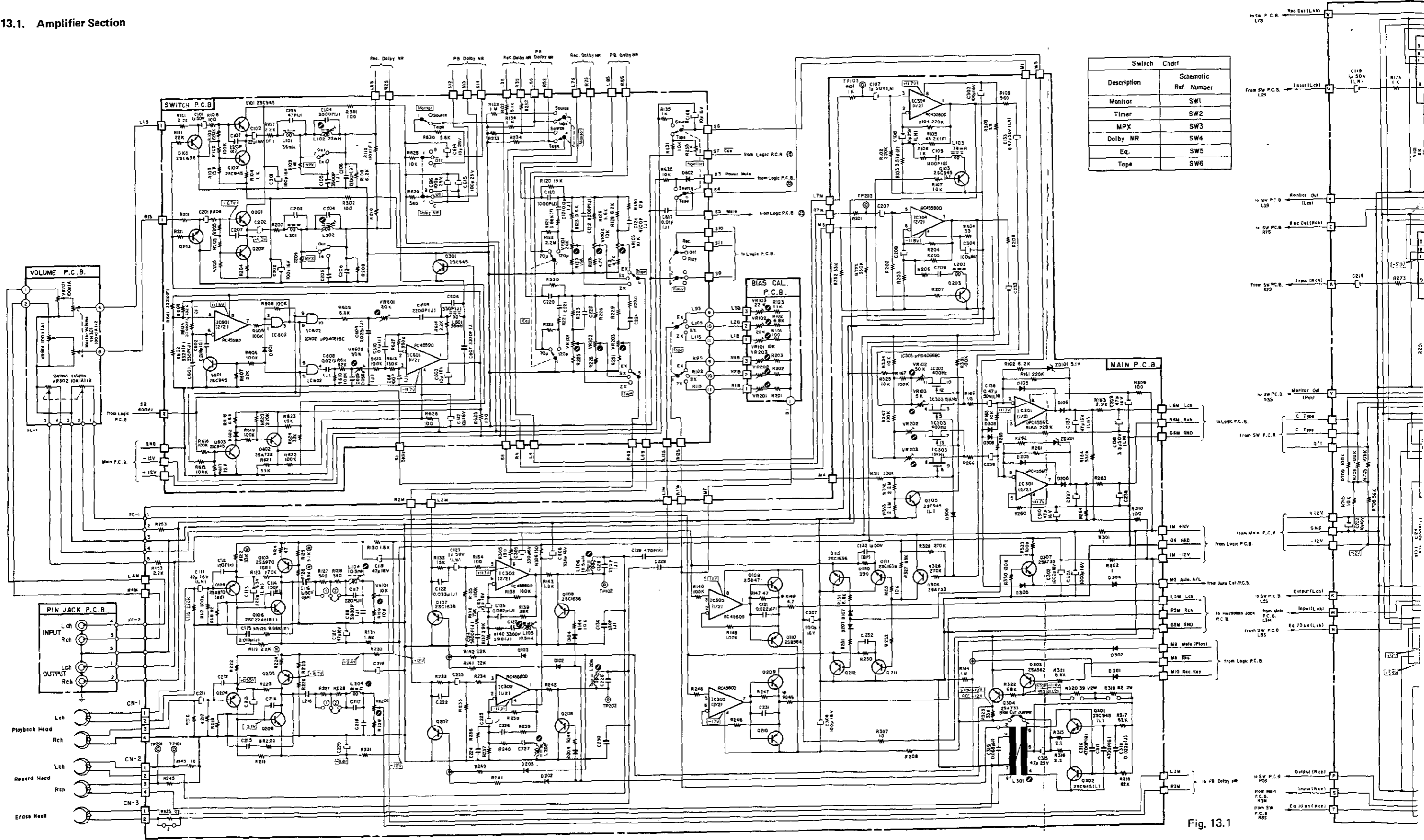


Fig. 12.2

13. SCHEMATIC DIAGRAMS

13.1. Amplifier Section



Switch Chart	
Description	Schematic Ref. Number
Monitor	SW1
Timer	SW2
MPX	SW3
Dolby NR	SW4
Eq.	SW5
Tape	SW6

Fig. 13.1

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

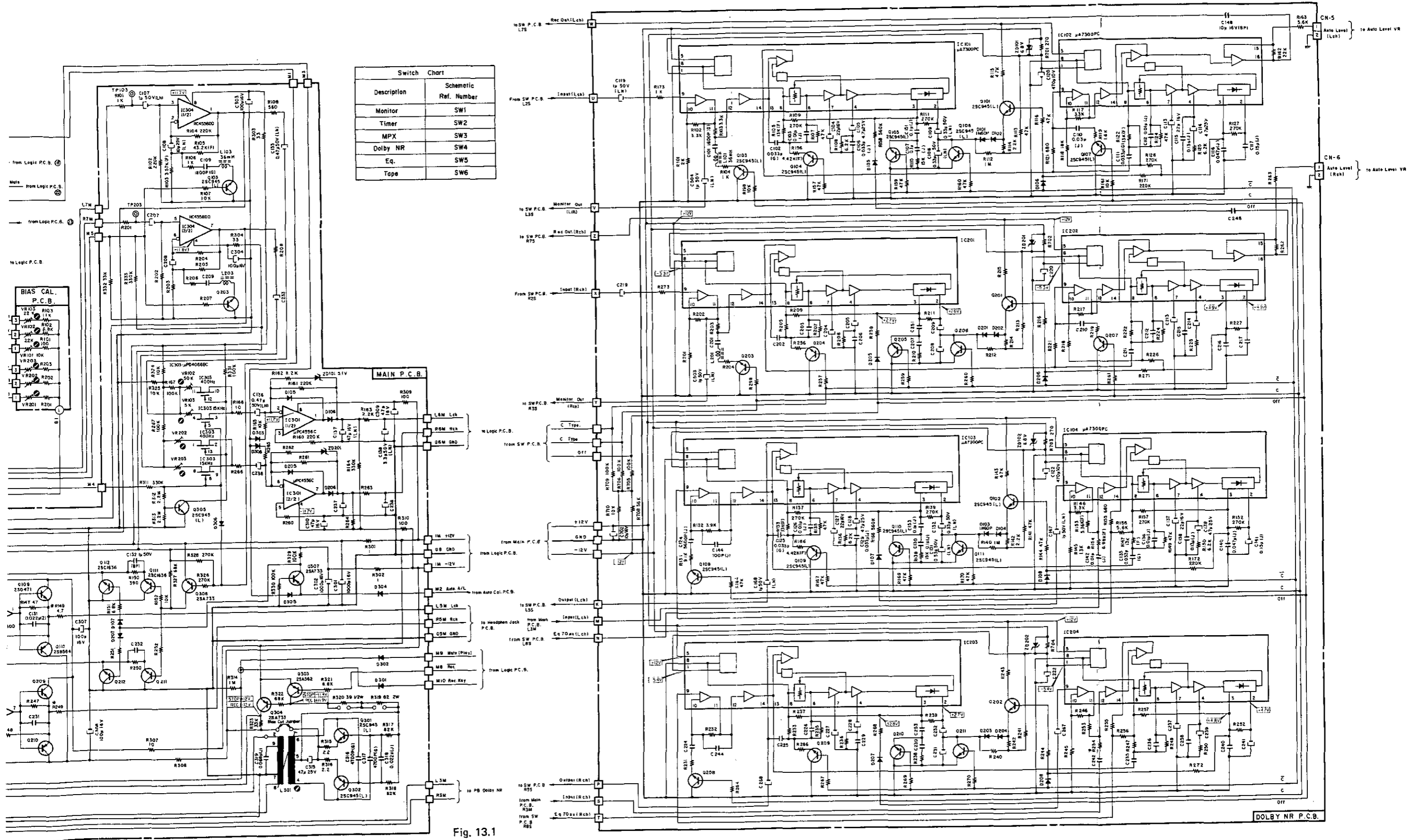
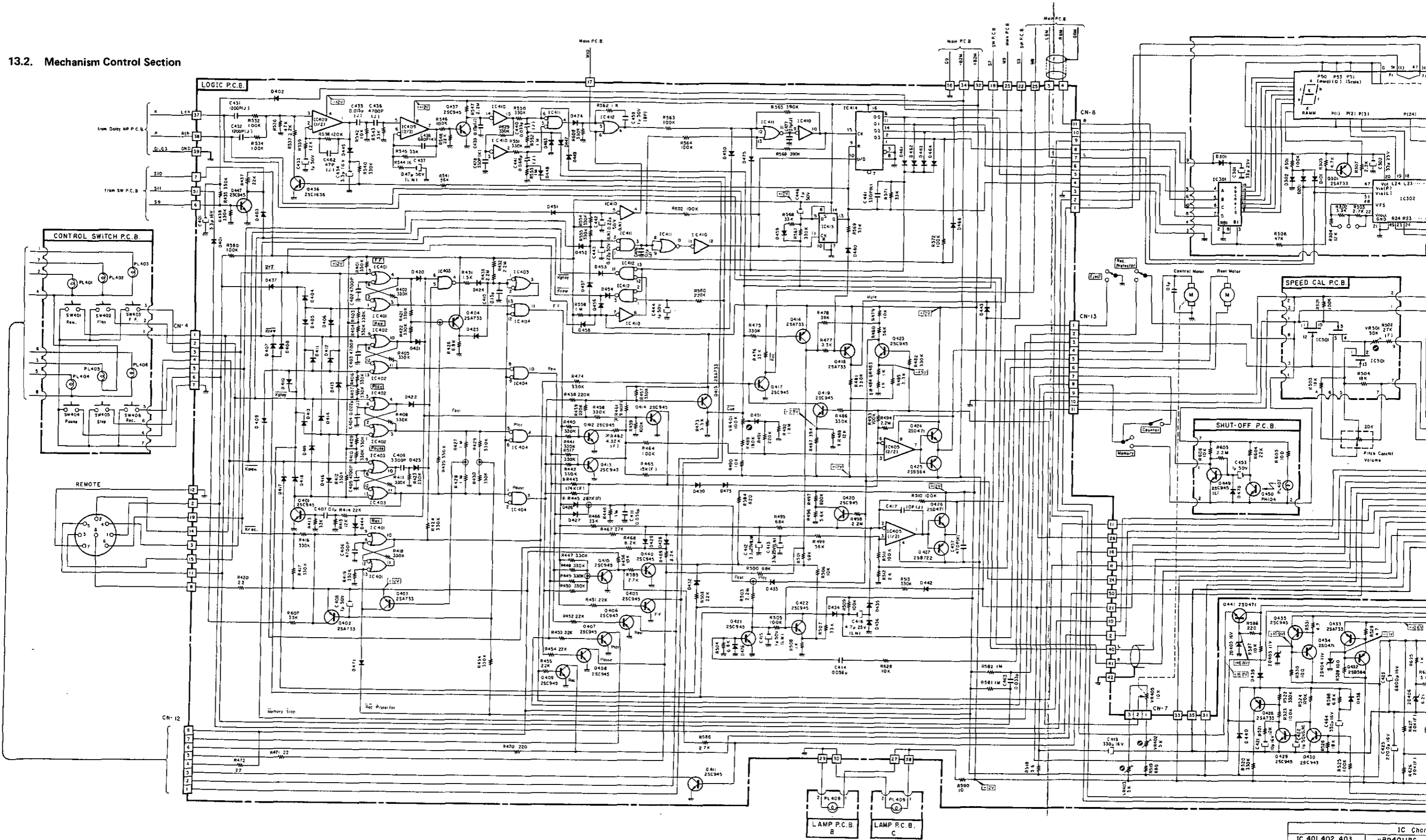


Fig. 13.1

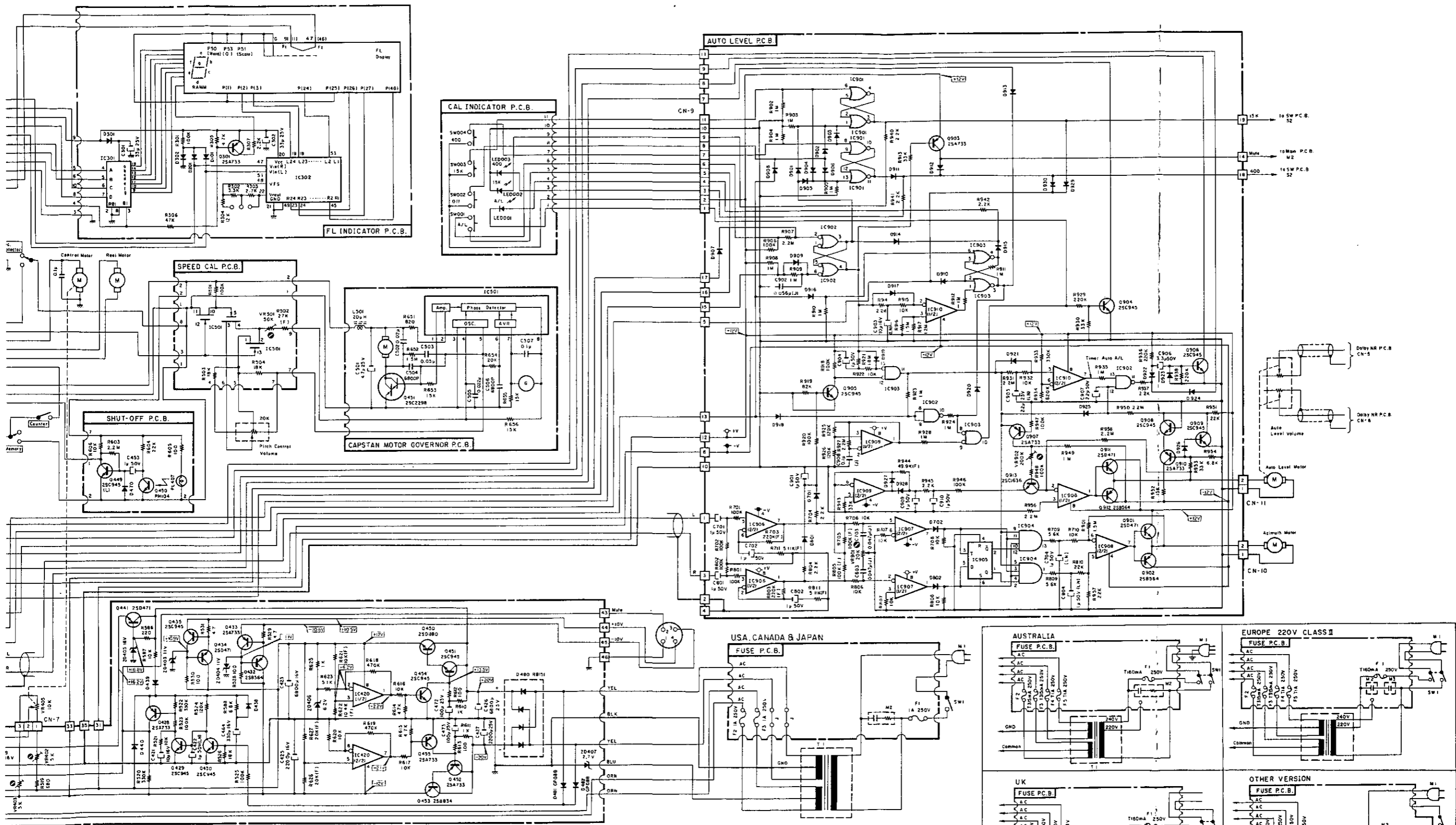
13.2. Mechanism Control Section



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

IC Chnr	
IC 401, 402, 403	μPD4011BC
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	μPD4011BC	IC 410	μPD4049BC
IC 404, 411	μPD4001BC	IC 412	μPD4071BC
IC 405, 420	RC4558D	IC 413	TC4013BP
IC 408	RC4559D	IC 414	TC451DBP

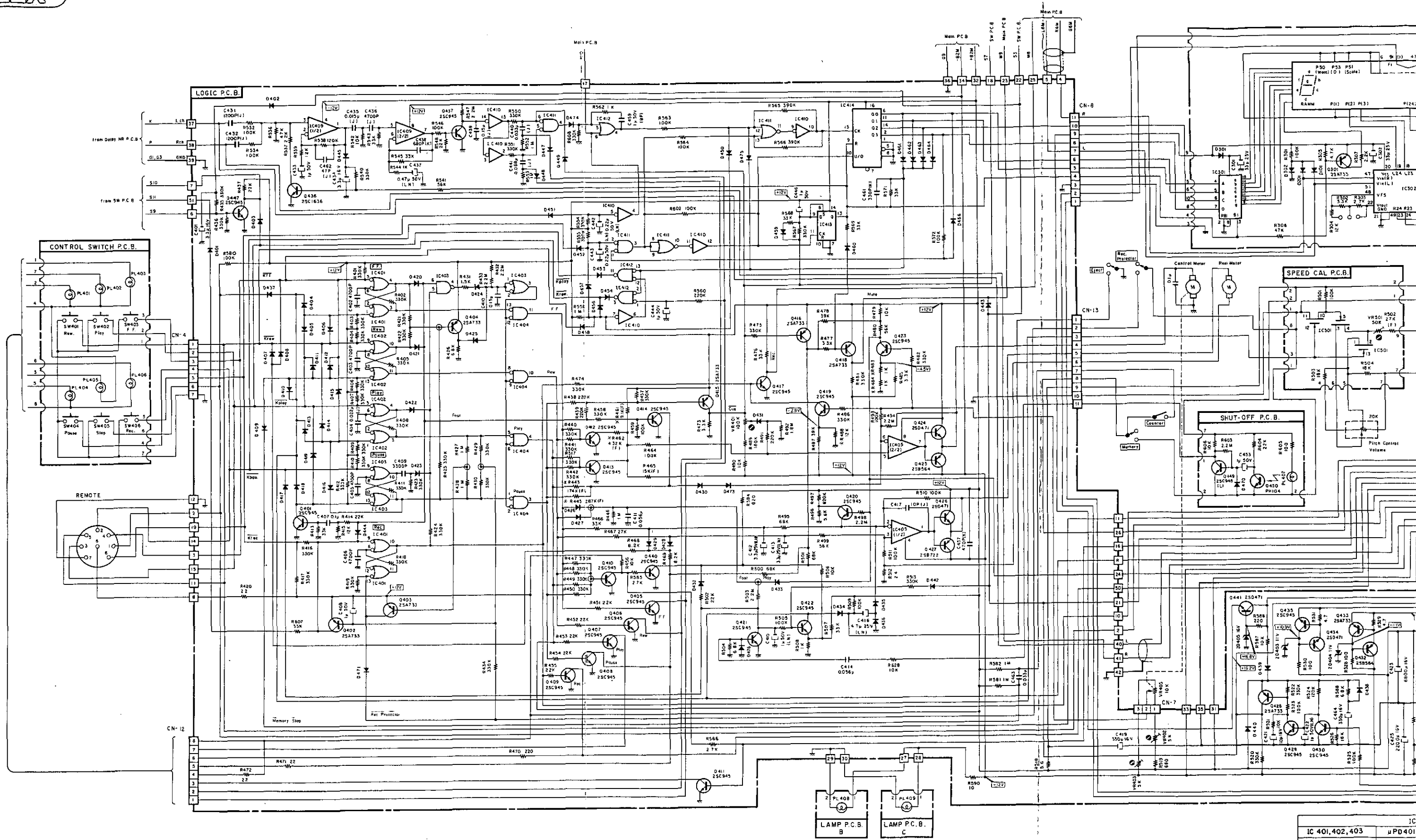
IC Chart (FL Indicator, Speed Cal.)

IC 301	TC5022BP
IC 302	MSM803RS
IC 501	μPD4066BC

IC Chart (Auto Level)

IC 901, 903	μPD4001BC	IC 906, 908, 909	
IC 902	μPD4011BC	910	RC4558D
IC 904	μPD4082BC	IC 907	μPC4556C
IC 905	TC4013BP		

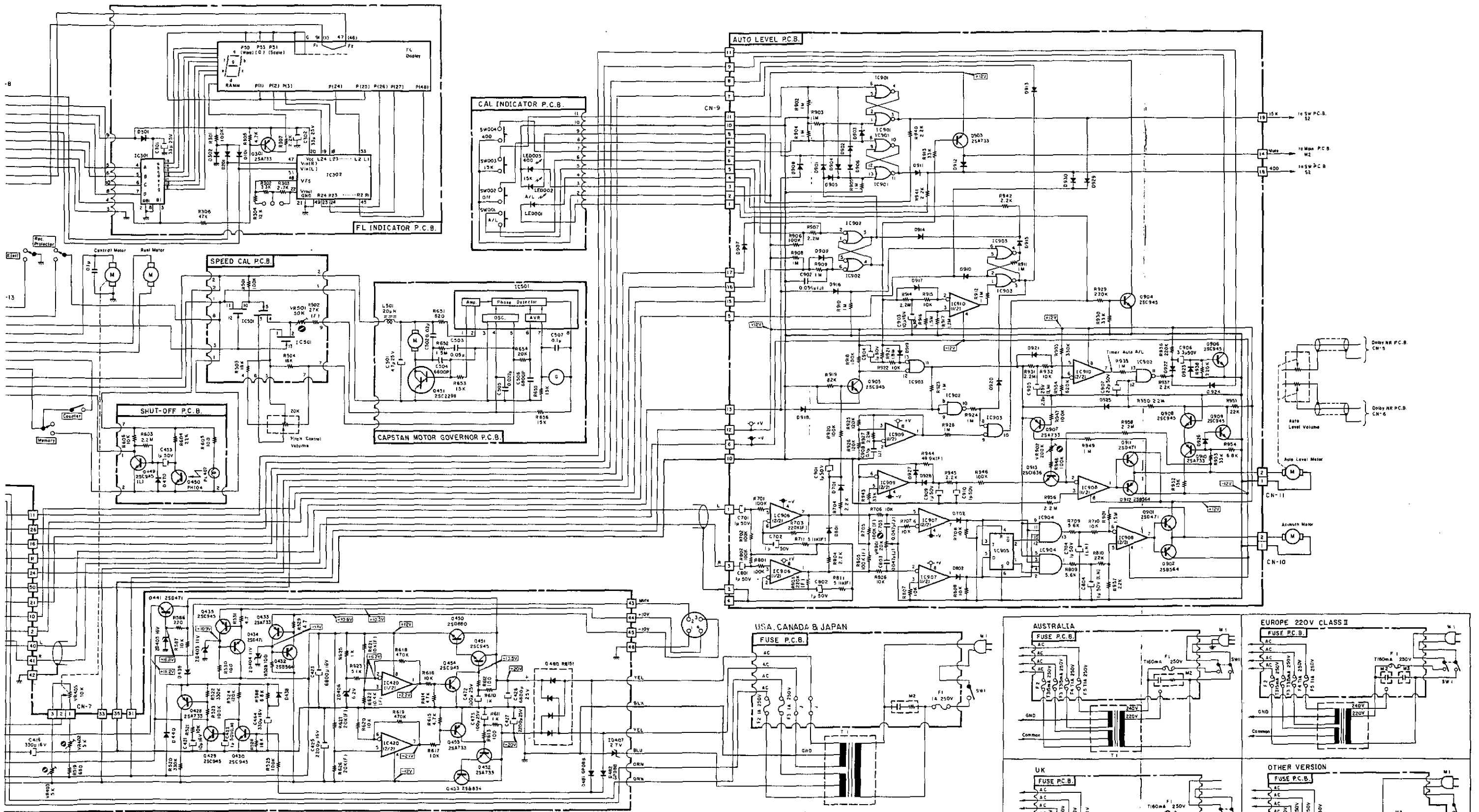
1 Serial No.: A12204890 -



Notes: 1. Diode is 1S53, 1S953, or 1S1555 unless otherwise specified.
 2. Resistor and capacitor marked with * show typical value.

Fig. 13.2.2 Serial Nos.: A12201001 - A12204889

IC	IC
IC 401, 402, 403	μPD4011
IC 404, 411	μPD40C
IC 405, 420	RC4558
IC 409	RC4559



Serial Nos.: A12201001 - A12204889

IC Chart (Logic)			
IC 401, 402, 403	μPD40118C	IC 410	μPD40498C
IC 404, 411	μPD40018C	IC 412	μPD40718C
IC 405, 420	RC4558D	IC 413	TC40138P
IC 409	RC4559D	IC 414	TC45108P

IC Chart (FL Indicator, Speed Cal.)	
IC 301	TC50228P
IC 302	MSM8038S
IC 501	μPD40668C

IC Chart (Auto Level)		
IC 901, 903	μPD40018C	IC 906, 908, 909
IC 902	μPD40118C	910
IC 904	μPD40828C	IC 907
IC 905	TC40138P	

USA, CANADA & JAPAN FUSE P.C.B.		AUSTRALIA FUSE P.C.B.		EUROPE 220V CLASS II FUSE P.C.B.		UK FUSE P.C.B.		OTHER VERSION FUSE P.C.B.	
F1	1A 250V	F1	1A 250V	F1	1A 250V	F1	1A 250V	F1	1A 250V
F2	1A 250V	F2	1A 250V	F2	1A 250V	F2	1A 250V	F2	1A 250V
F3	1A 250V	F3	1A 250V	F3	1A 250V	F3	1A 250V	F3	1A 250V
F4	1A 250V	F4	1A 250V	F4	1A 250V	F4	1A 250V	F4	1A 250V
F5	1A 250V	F5	1A 250V	F5	1A 250V	F5	1A 250V	F5	1A 250V

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

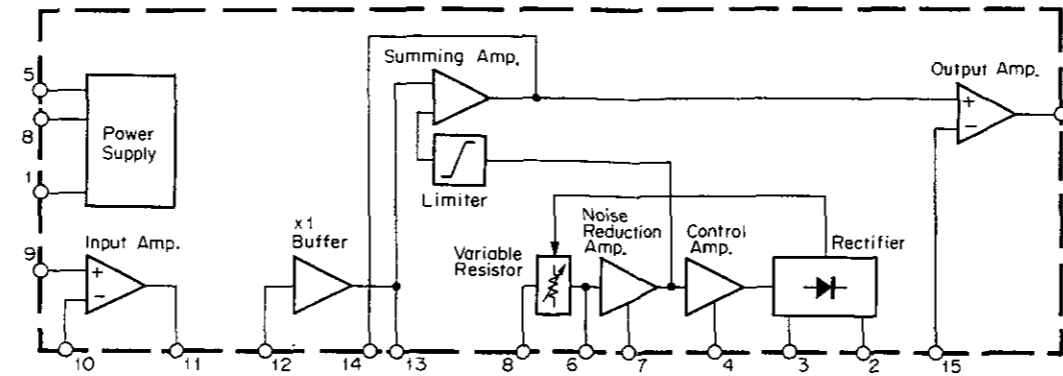


Fig. 13.3 Dolby NR IC μ A7300PC

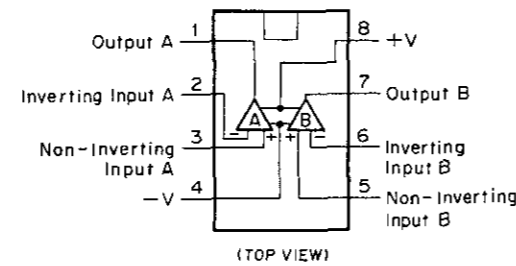


Fig. 13.4 OP Amp. IC 4558, 4559, 4556, 4560

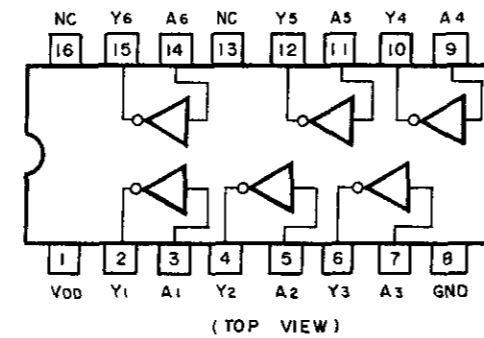


Fig. 13.6 Inverter C-MOS IC μ PD4049BC

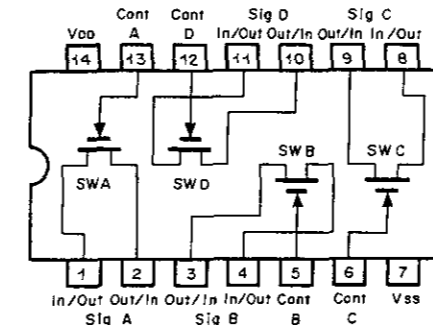


Fig. 13.5 Bilateral Switch C-MOS IC μ PD4066BC

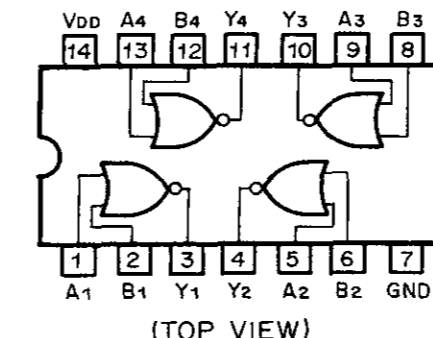


Fig. 13.7 NOR Gate C-MOS IC μ PD4001BC

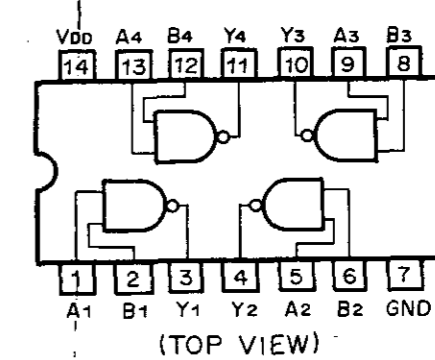


Fig. 13.8 NAND Gate C-MOS IC μ PD4011BC

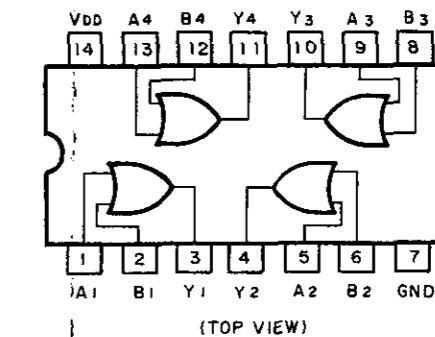


Fig. 13.9 OR Gate C-MOS IC μ PD4071BC

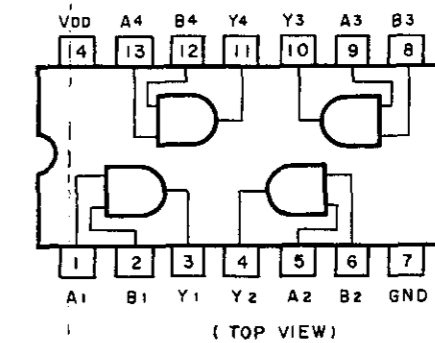


Fig. 13.10 AND Gate C-MOS IC μ PD4081BC

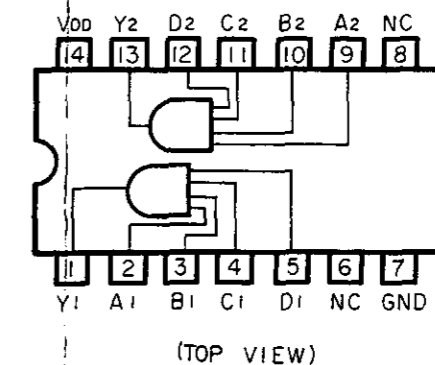


Fig. 13.11 AND Gate C-MOS IC μ PD4082BC

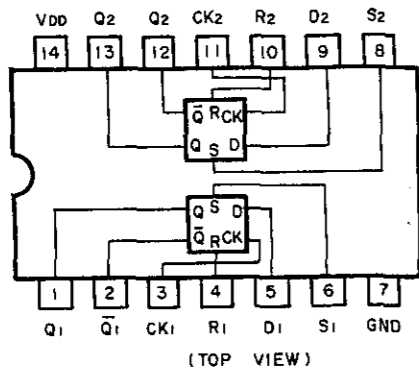


Fig. 13.12 D-Type Flip-Flop C-MOS IC TC4013BP

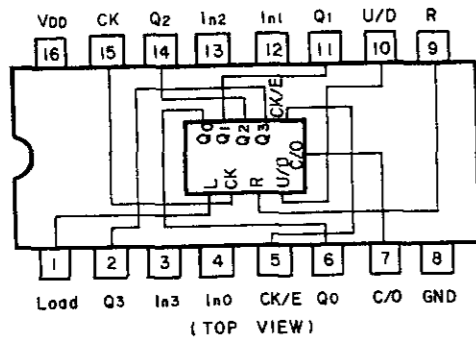


Fig. 13.13 BCD Up/Down Counter C-MOS IC TC4510BP

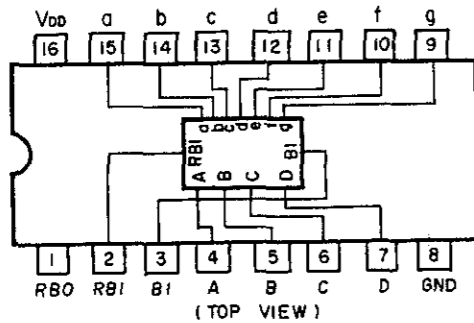


Fig. 13.14 BCD to 7-segment Decoder/Driver C-MOS IC TC5022BP

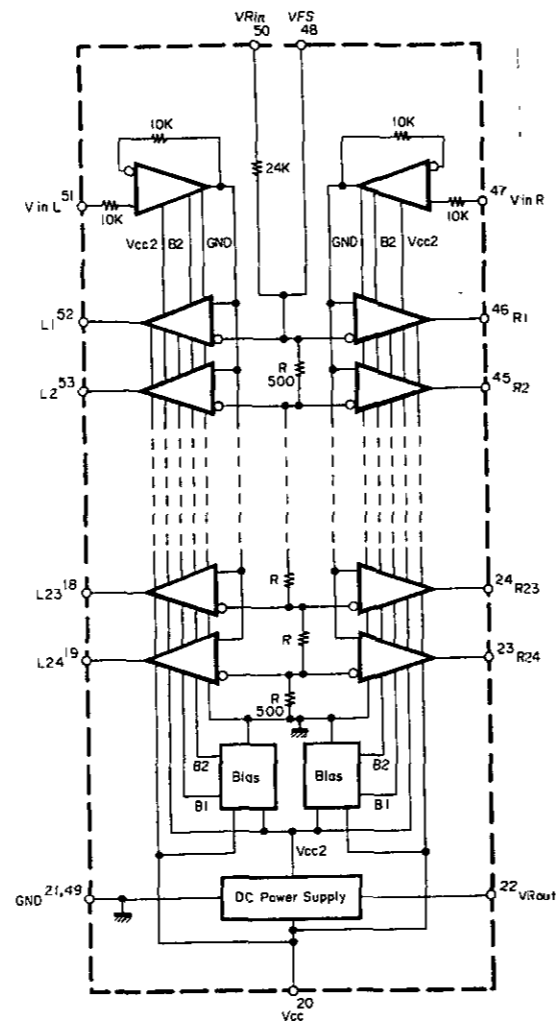


Fig. 13.15 2-Channel 24-Level Comparator for Level Meter MSM803RS

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, EX11 tape)
Signal to Noise Ratio	Dolby C-Type NR on <70 μ s, ZX tape> Better than 72 dB (400 Hz, 3% THD, IHF A-wtd rms) Dolby B-Type NR on <70 μ s, 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, EX11 tape)
Erase	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
(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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