# KP-77G U,C,E

COMPONENT CAR STEREO
CASSETTE DECK

# SERVICE MANUAL
(REVISED EDITION)


**Subject:**
For Cassette Mechanism, refer to the Service Manual of unit number X-103SM and CX-103SV (KP-77G/E), CX-103SV/A (KP-77G/U, C).

**SERIAL NO. APPLIED**

KP-77G/U.....88~
KP-77G/C..... 7~
KP-77G/E.....126~

## SPECIFICATIONS

**General**

Power source . . . . . DC 13.8V (11 ~ 16V allowable)
Grounding system . . . . . Negative type
Tone controls . . . . . Bass: ±10dB (100Hz)
Treble: ±10dB (10kHz)
Loudness contour (Volume: −30dB) . . . . +12dB (100Hz)
+ 4dB (10kHz)
Attenuator . . . . . −20dB
Maximum output level . . . . . More than 180mV
Output impedance . . . . . 100Ω
Dimensions (W x H x D) . . . . . 150 x 50 x 167mm
(5-7/8 x 2 x 6-5/8 in.)
Weight . . . . . 1.5kg (3.3 lbs.)

**Tape player**

Tape . . . . . Compact cassette tape (C-30 ~ C-90)
Tape speed . . . . . 4.76cm/sec. (+0.19cm/sec.)
(−0.05cm/sec.)
Fast forward time . . . . . Within 120sec. for C-60
Rewind time . . . . . Within 120sec. for C-60
Wow & flutter . . . . . No more than 0.13% (WRMS)
Frequency response . . . . . 30 ~ 15,000Hz (±3dB)
Cross talk . . . . . More than 46dB
Signal-to-noise ratio . . . . . More than 52dB

**Note:**
Specifications and the design subject to possible modification without notice due to improvements.

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## CONTENTS



## 1. PARTS LOCATIONS

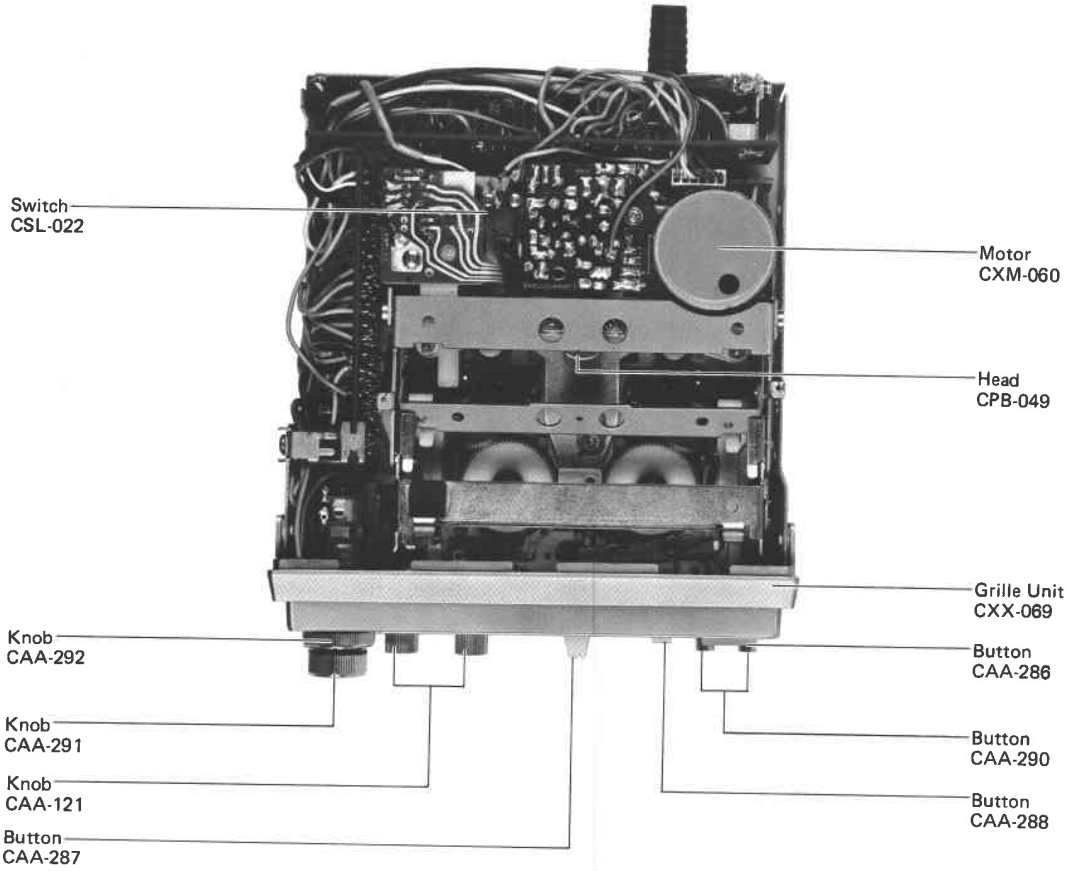



Fig. 1

- **Block Diagram**

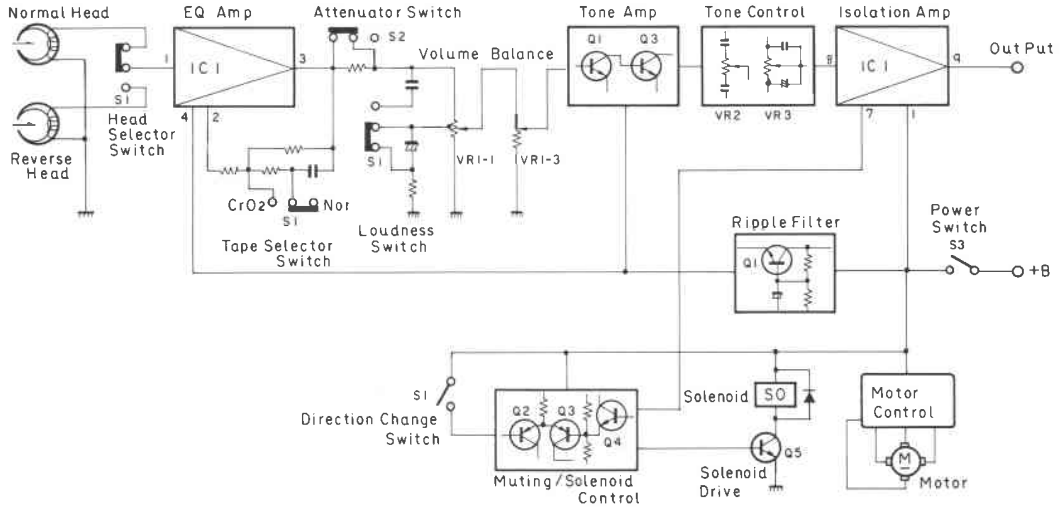



Fig. 2

- **Level Diagram**

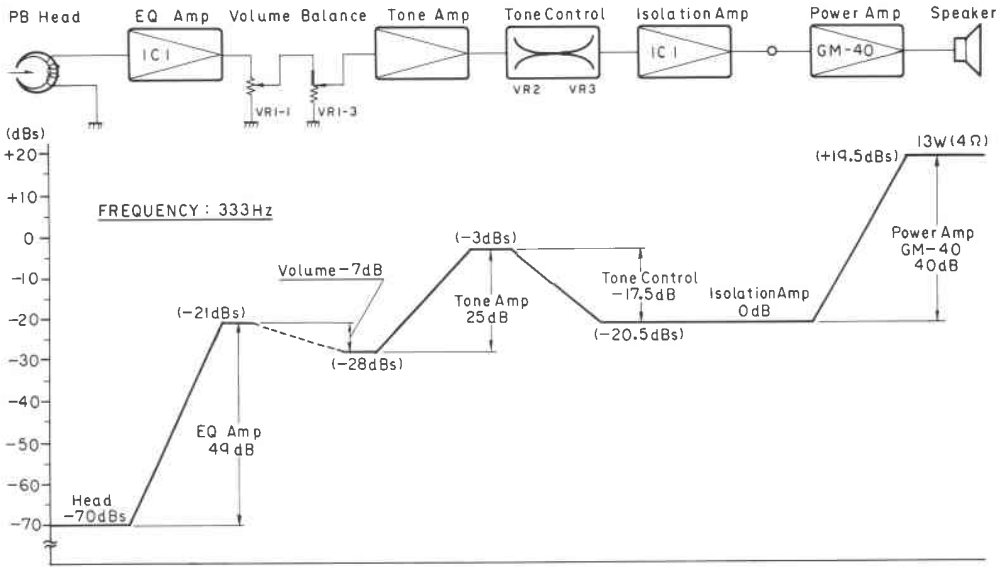



Fig. 3

## • Normal/Chrome Changeover Switch

The standard EQ Response of existing tape has been characterized by two points of distortion in the high and low regions. Normal and Chrome tapes have different distortion points in the high region. So, by switching to either the Normal or Chrome position with the Tape Selector Switch, frequency response is flattened during playback.

Now, the distortion point in the low regions for both Normal and Chrome tapes in constant at C1, R1 when T1=3300$\mu$s. In the high regions for the Normal position, C1, R1~R3 is almost fixed and T2=120$\mu$s. When Normal tape is played back, the frequency response is flattened accordingly.

For the Chrome position, T3=70$\mu$s when fixed at C1, R1, R3. The frequency response of Chrome tapes in playback is accordingly flattened.

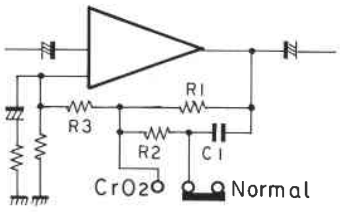



Fig. 4

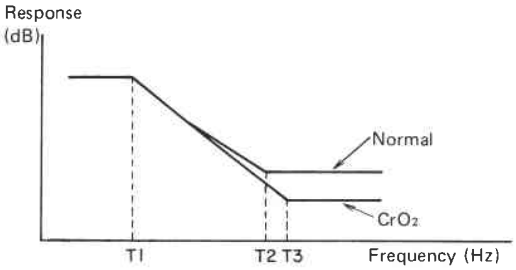



Fig. 5

## • Muting Signal and Solenoid Drive Signal Control Circuit

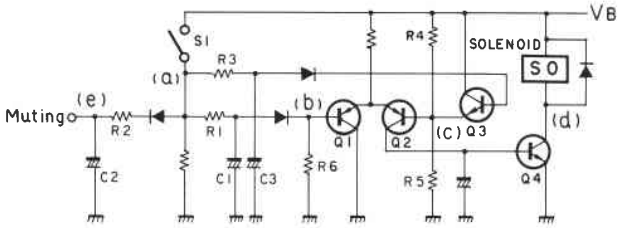



Fig. 6

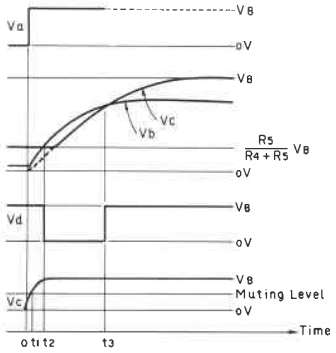



Fig. 7

This circuit employs a comparator circuit consisting of PNP transistors Q1 and Q2 to govern the muting circuit input signal and solenoid drive signal.

Normally, when S1 (sensing switch, direction change switch) is off, the voltage $V_C$ at point (c) is the reference voltage ( $\frac{R5}{R4+R5} \cdot V_B$) determined by R4 and R5. At point (b) the voltage $V_b$ is less than $V_C$, so that Q1 is on and Q2 is off. Now, if S1 is turned on, a positive voltage will be applied to the above circuit. This input voltage is delayed by R1 and C1 before reaching point (b).

Meanwhile, the voltage delayed by R3 and C3 passes Q3 and reaches point (c). However, until the reference voltage is surpassed, Q3 remains off, so $V_C$ does not rise. The circuit is designed so that the time constants are R3·C3>R1·C1. Therefore, when S1 is switched on, after the time t2, $V_b > V_C$ so that Q1 switches from on to off, while Q2 switches from off to on. Because of this, the Q4 base current will flow, Q4 will turn on, and turn on the solenoid.

Since $V_b$ only rises as far as the voltage ( $\frac{R6}{R1+R6} \cdot V_B$) determined by R1 and R6, and $V_C$ rises to ( $\frac{hfe \cdot R5}{R3+hfe \cdot R5} \cdot V_B \fallingdotseq V_B$) after the time t3 we will have $V_C > V_b$, so that Q1 will go on → off → on, while Q2 will go off → on → off. Therefore, there will be no base current flowing in Q4 so Q4 will turn off and turn off the solenoid.

The muting voltage is delayed by R2 and C2 and applied to the muting circuit, so that it reaches muting level after t1, at which point muting operates.

# 3. DISASSEMBLY

- **Demounting the Cassette Mechanism Assembly:**

1. Remove the screws marked with arrows, and then take off the case. (Fig. 8)
2. Remove the buttons (Fig. 8).
3. Remove the screws marked with arrows (Fig. 9).

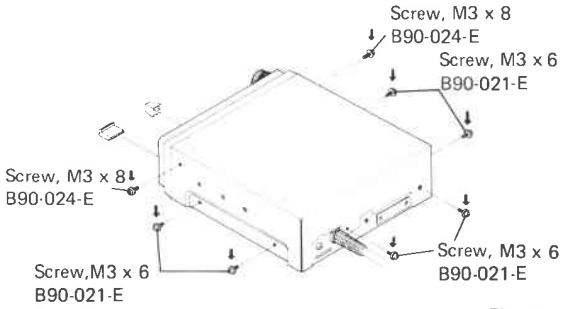



Fig. 8

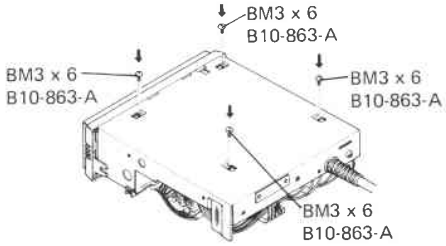



Fig. 9

4. Remove Connectors (A) and (B) as indicated by the arrows (Fig. 10).
   **Notice:** Check the position of connector (B) when removing.
5. Move the Cassette Mechanism Assembly diagonally to the rear to remove (Fig. 11).

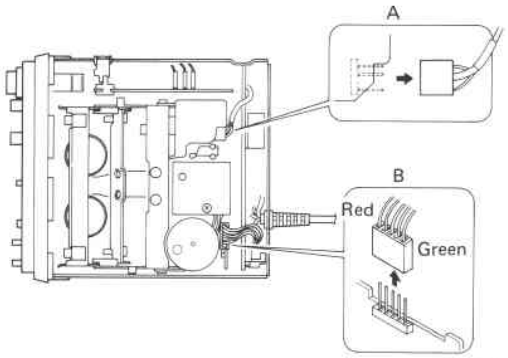



Fig. 10

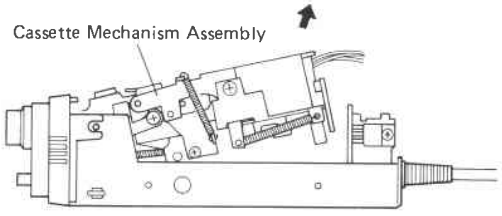
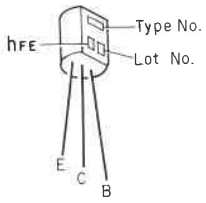
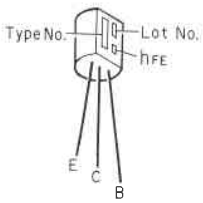



Fig. 11

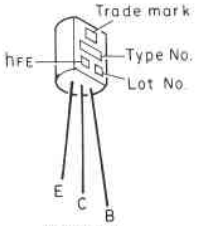
- **IC's and Transistors**



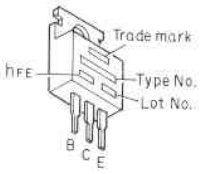

2SA826
2SC1740LN



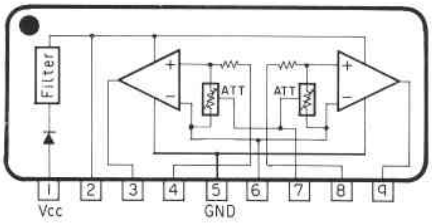

2SC1815



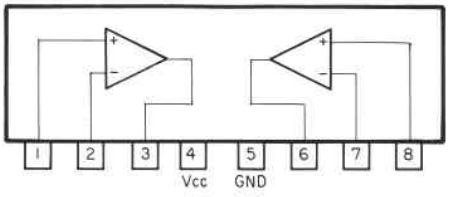

2SC2634




2SD837

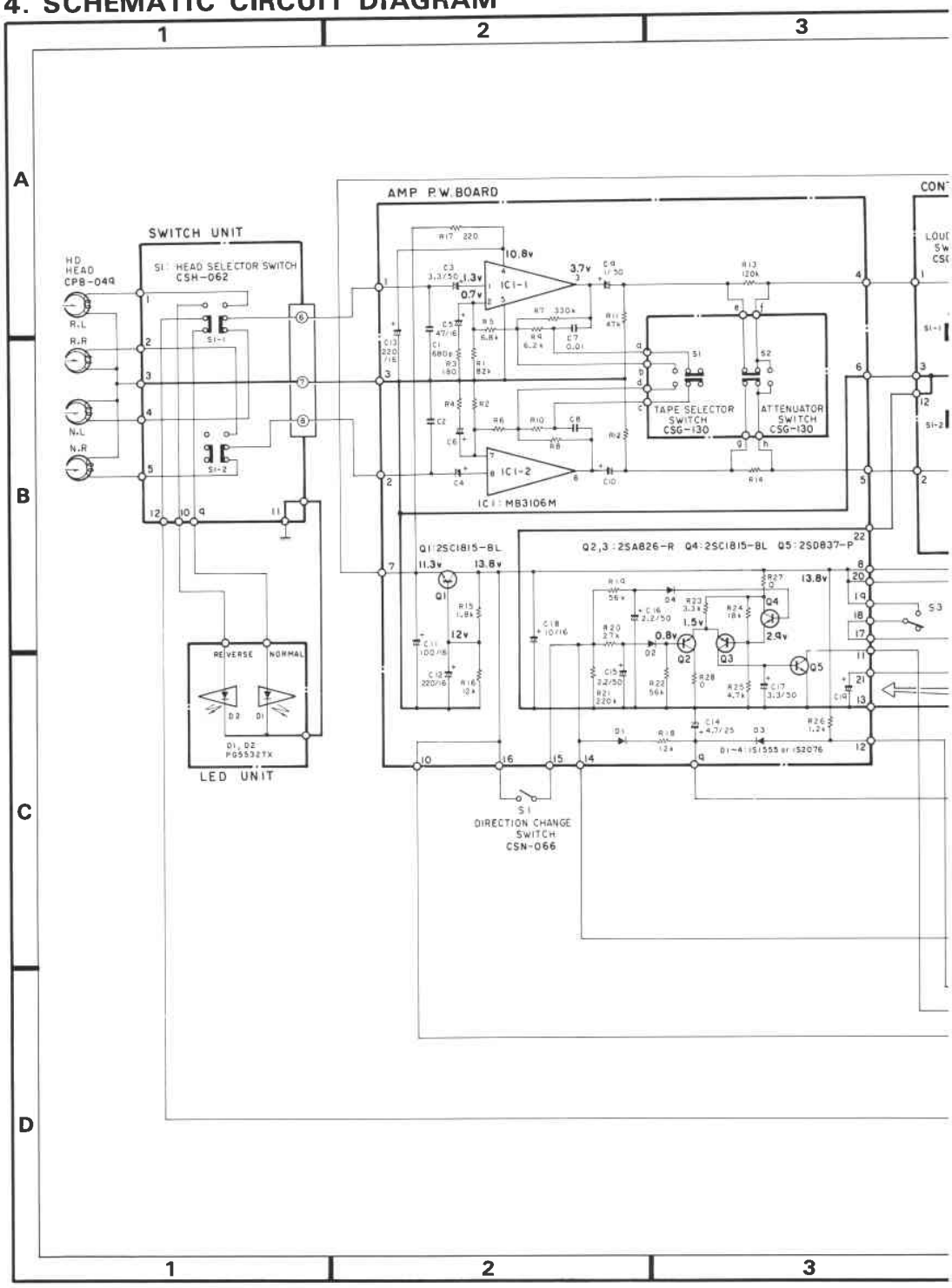


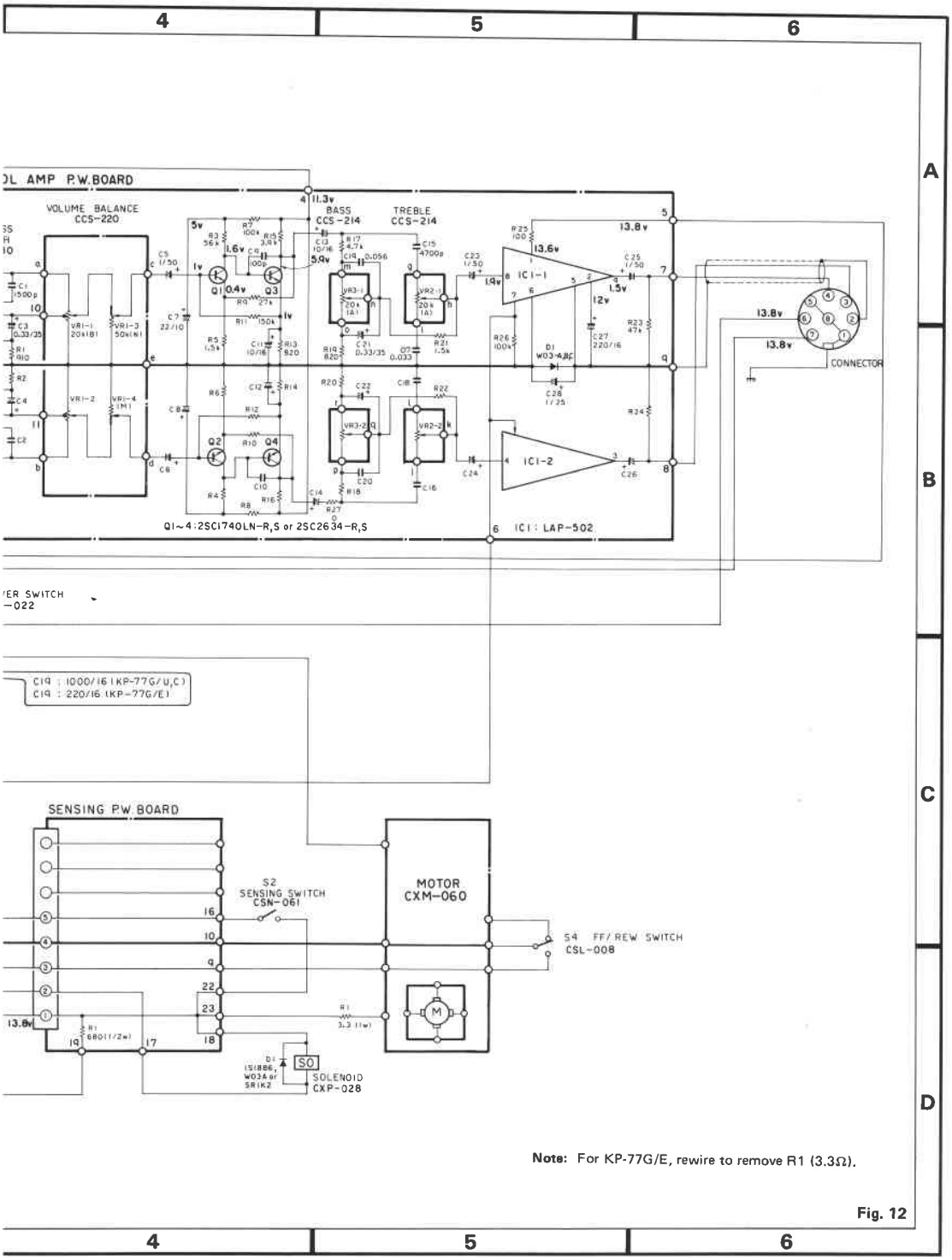

LAP-502




MB3106M

# 4. SCHEMATIC CIRCUIT DIAGRAM

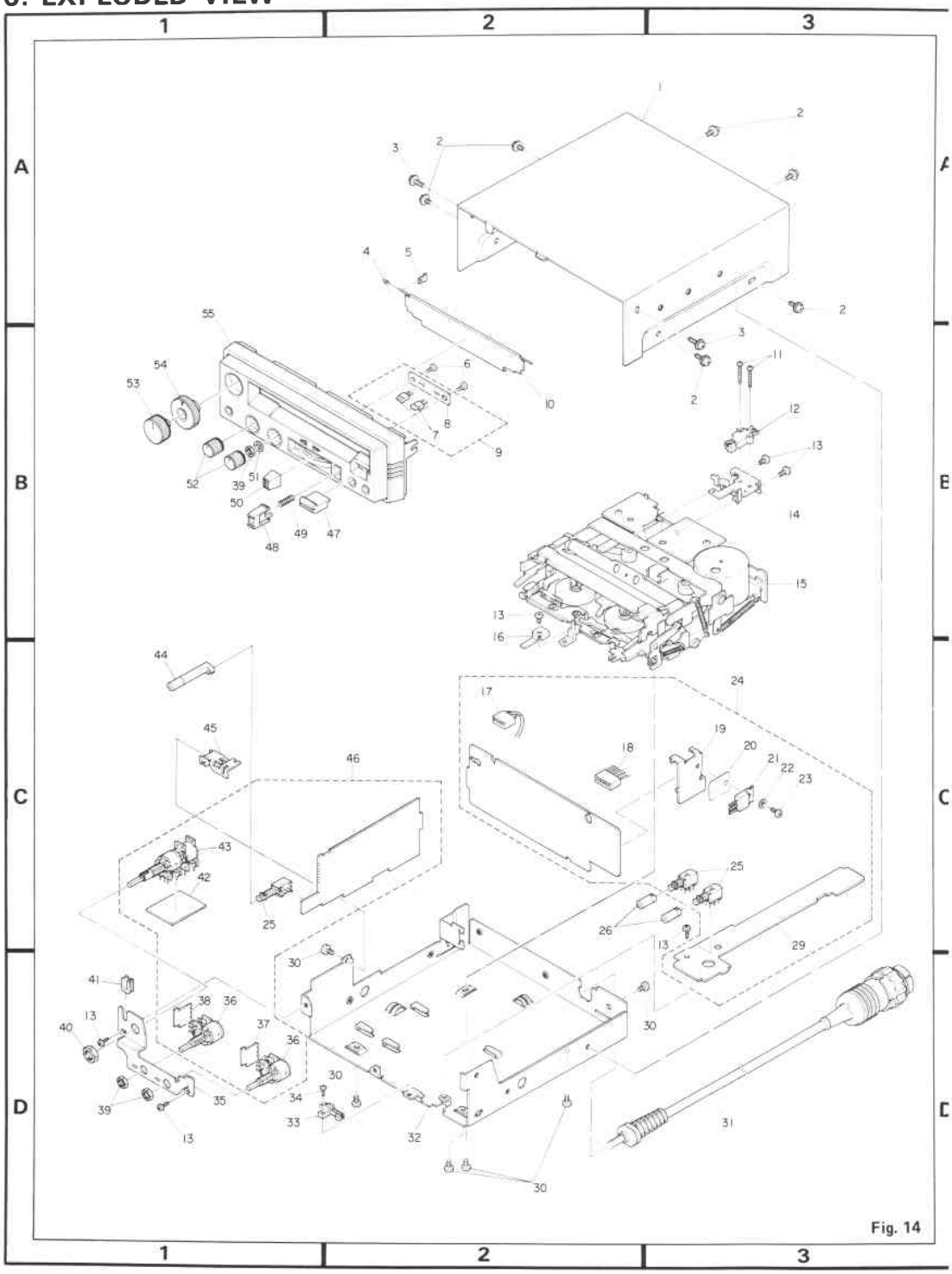





**Note:** For KP-77G/E, rewire to remove R1 (3.3Ω).

**Fig. 12**

## 6. EXPLODED VIEW



## 7. PACKING METHOD

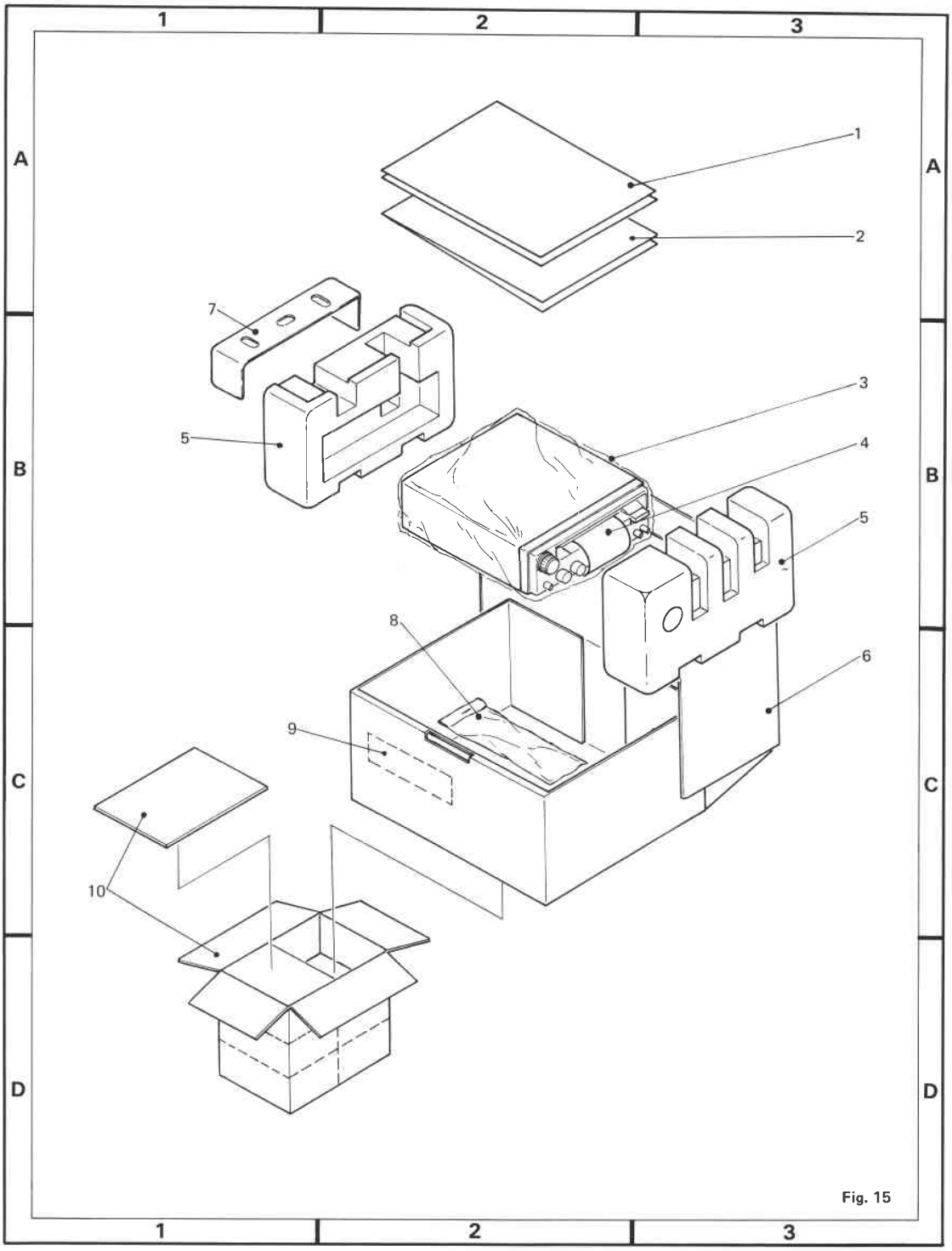
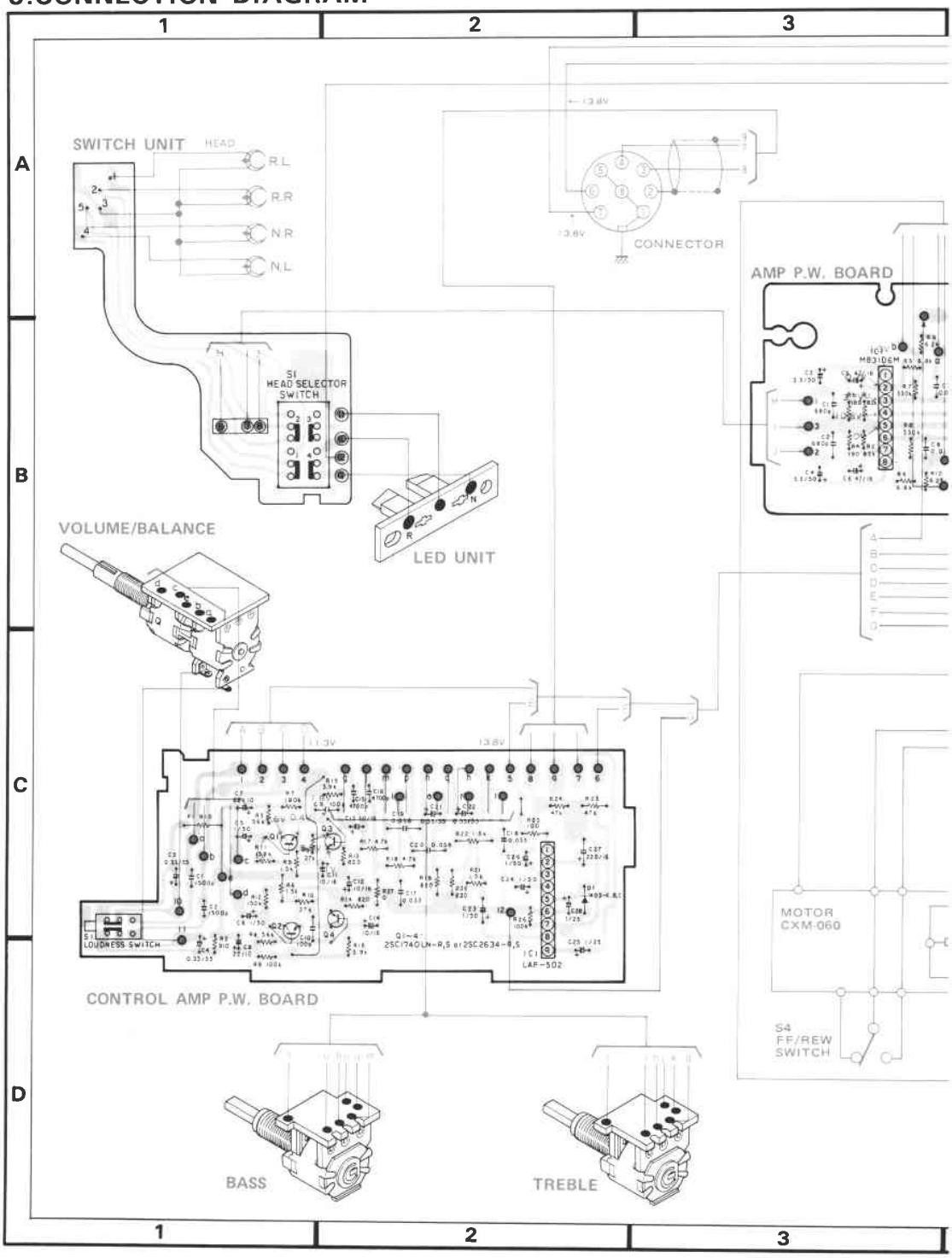



Fig. 15

## 5.CONNECTION DIAGRAM



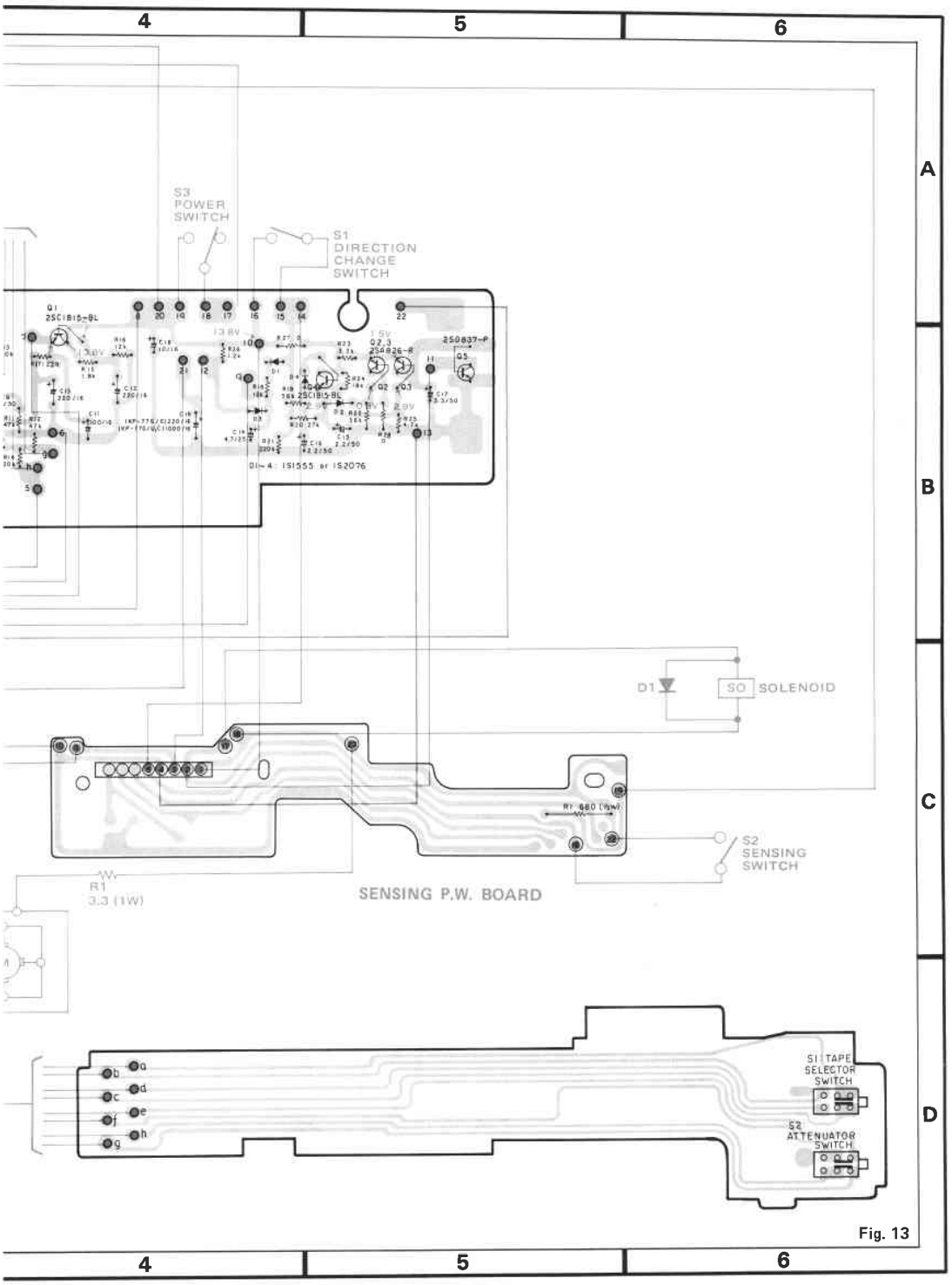



Fig. 13

*NOTE:*
*When ordering resistors, first convert resistance values into code form as shown in the following examples.*

*Ex. 1 . When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).*

| | | | |
|---|---|---|---|
| *560Ω* | *$56\times10^{1}$* | *561* | *RD1/4PS 5 6 1 J* |
| *47kΩ* | *$47\times10^{3}$* | *473* | *RD1/4PS 4 7 3 J* |
| *0.5Ω* | *0R5* | | *RN2H 0 R 5 K* |
| *1Ω* | *010* | | *RS1P 0 1 0 K* |

*Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).*

| | | | |
|---|---|---|---|
| *5.62kΩ* | *$562\times10^{1}$* | | *RN1/4SR 5 6 2 1 F* |

- *Parts whose parts numbers are omitted are subject to being not supplied.*

## Amp P.W. Board

### MISCELLANEOUS

| Part No. | Symbol & Description |
|---|---|
| MB3106M | IC1 |
| 2SC1815 | Q1, Q4 |
| 2SA826 | Q2, Q3 |
| 2SD837 | Q5 |
| 1S1555 or | D1–D4 |
| 1S2076 | |

### RESISTORS

| Part No. | Symbol & Description |
|---|---|
| RD1/4VS□□□J | R1–R26 |
| CCN-056 | R27, R28 0Ω |

### CAPACITORS

| Part No. | Symbol & Description |
|---|---|
| CKPVYB 681K 50 | C1, C2 |
| CEANL 3R3M 50L | C3, C4 |
| CEA 470M 16L | C5, C6 |
| CQMA 103K 50 | C7, C8 |
| CEANL 010M 50L | C9, C10 |
| CEA 101M 16L | C11 |
| CEA 221M 16L | C12, C13 |
| CEA 4R7M 25L | C14 |
| CEA 2R2M 50L | C15, C16 |
| CEA 3R3M 50L | C17 |
| CEA 100M 16L | C18 |
| CEA 221M 16L | C19 (KP-77G/E) |
| CEA 102M 16L | C19 (KP-77G/U,C) |

## Control Amp P.W. Board

### MISCELLANEOUS

Note: As for the Q1–Q4, use the same ones and the same rank for both channels.

| Part No. | Symbol & Description | |
|---|---|---|
| LAP-502 | IC1 | |
| 2SC1740LN-R,S or 2SC2634-R, S | Q1–Q4 | |
| WO3A, B, C | D1 | |
| CSG-130 | S1 | Switch |

### RESISTORS

| Part No. | Symbol & Description |
|---|---|
| RD1/4VS□□□J | R1–R26 |
| CCN-056 | R27 0Ω |

### CAPACITORS

| Part No. | Symbol & Description |
|---|---|
| CQMA 152K 50 | C1, C2 |
| CSZA R33M 35 | C3, C4, C21, C22 |
| CEANL 010M 50L | C5, C6 |
| CEA 220M 10L | C7, C8 |
| CCPVSL 101J 50 | C9, C10 |
| CEA 100M 16L | C11–C14 |
| CQMA 472K 50 | C15, C16 |
| CQMA 333K 50 | C17, C18 |
| CQMA 563K 50 | C19, C20 |
| CEA 010M 50L | C23–C26 |
| CEA 221M 16L | C27 |
| CSZA 010M 25 | C28 |

## LED Unit

| Part No. | Symbol & Description |
|---|---|
| PG5532TX | D1, D2 |

## Switch Unit

| Part No. | Symbol & Description | |
|---|---|---|
| CSH-062 | S1 | Switch |

## Sensing P.W. Board

| Part No. | Symbol & Description |
|---|---|
| RD1/2PS681J | R1 |

## Switch P.W. Board

| Part No. | Symbol & Description | |
|---|---|---|
| CSG-130 | S1, S2 | Switch |

## Miscellaneous Parts List

**Note:** For KP-77G/E, rewire to remove R1 (3.3Ω).

| Part No. | Symbol & Description | |
|---|---|---|
| 1S1886 or W03A or SR1K2 | D1 | |
| CCS-220 | VR1-1—VR1-4 | Volume, 20kΩ(B), 50kΩ(BH) |
| CCS-214 | VR2, VR3 | Volume, 20kΩ(A) |
| CPB-049 | HD | Head |
| CXP-028 | SO | Solenoid |
| CXM-060 | M | Motor |
| CSN-066 | S1 | Switch |
| CSN-061 | S2 | Switch |
| CSL-022 | S3 | Switch |
| CSL-008 | S4 | Switch |
| RN1P 3R3K or RN1P 3R3J | R1 | (KP-77G/U,C) |

## Exploded View

| Key No. | Part No. | Description |
|---|---|---|
| 1. | CNB-521 | Case |
| 2. | B90-021-E | Screw, M3 x 6 |
| 3. | B90-024-E | Screw, M3 x 8 |
| 4. | CBH-549 | Spring |
| 5. | CNE-516 | Holder |
| 6. | B08-219-A | Screw, M2.6 x 6 |
| 7. | PG5532TX | LED |
| 8. | | P.W. Board |
| 9. | | LED Unit |
| 10. | CAT-077 | Door |
| 11. | B90-015-A | BM2 x 14 |
| 12. | CSL-022 | Switch |
| 13. | B10-809-A | BM2.6 x 4 |
| 14. | | Lever Unit |
| 15. | | Cassette Mechanism Assy |
| 16. | | Holder |
| 17. | CDE-555 | Connector |
| 18. | CDE-703 | Connector |
| 19. | | Heat Sink |
| 20. | CNM-030 | Insulator |
| 21. | 2SD837 | Transistor |
| 22. | B21-679-O | Bush |
| 23. | B10-811-A | BM 2.6 x 6 |
| 24. | | Amp Unit |
| 25. | CSG-130 | Switch |
| 26. | CAA-290 | Button |
| 27. | VACANT | |
| 28. | VACANT | |
| 29. | | P.W. Board |
| 30. | B10-863-A | BM3 x 6 |
| 31. | CDE-659 | Connector |
| 32. | | Chassis |
| 33. | CSN-066 | Switch |
| 34. | B10-209-A | PM2.6 x 4 |
| 35. | | Bracket |
| 36. | CCS-214 | Volume, 20kΩ(A) |
| 37. | | P.W. Board |
| 38. | | P.W. Board |
| 39. | CBA-066 | N6φ x 2t |
| 40. | CBA-067 | N7φ x 2t |
| 41. | | Holder |
| 42. | | P.W. Board |
| 43. | CCS-220 | Volume, 20kΩ(B), 50kΩ(BH) |
| 44. | CAA-289 | Button |
| 45. | | Holder |
| 46. | | Control Amp Unit |
| 47. | CAA-286 | Button |
| 48. | CAA-288 | Button |
| 49. | CBH-550 | Spring |
| 50. | CAA-287 | Button |
| 51. | CBF-091 | FW6φ x 1.6t |
| 52. | CAA-121 | Knob |
| 53. | CAA-291 | Knob |
| 54. | CAA-292 | Knob |
| 55. | CXX-069 | Grille Unit |

## Packing Method

| Key No. | Part No. | Description |
|---|---|---|
| 1. | | Card (KP-77G/U, C) |
| 2. | CRB-347 | Owner's Manual (KP-77G/U) |
| | CRD-077 | Owner's Manual (KP-77G/C, E) |
| | CRD-076 | Owner's Manual (KP-77G/E) |
| 3. | CEG-113 | Cover |
| 4. | | Label |
| 5. | CHB-681 | Styrofoam (1 set pair) |
| 6. | CHB-584 | Carton (KP-77G/U, C) |
| | CHB-586 | Carton (KP-77G/E) |
| 7. | CNB-198 | Mounting Bracket |
| 8. | CEA-250 | Accessory Kit |
| 8-1. | CNC-975 | Strap |
| 8-2. | CDE-437 | Cord |
| 8-3. | CEA-208 | Screw Kit |
| 8-3-1. | CBA-028 | Screw for Strap |
| 8-3-2. | B90-064-A | Screw, M4 x 8 |
| 8-3-3. | B90-065-A | PSB5 x 16 |
| 8-3-4. | B70-055-A | WN4$\phi$ x 4.5t |
| 8-3-5. | B70-056-A | WN5$\phi$ x 5.3t |
| 8-3-6. | B20-013-A | SW4$\phi$ x 1t |
| 8-3-7. | B10-863-E | BM3 x 6 |
| 9. | CAN-301 | Seal (These seals are applied only to the Model KP-77G/C.) |
| 10. | CHB-583 | Contain Box (KP-77G/U) |