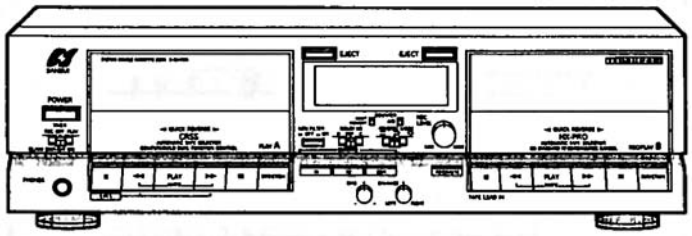
SANSUI

# SERVICE MANUAL

# D-X311WR

## STEREO DOUBLE CASSETTE DECK



**CAUTION**

1. Parts identified by the ⚠ symbol on the schematic diagram and the parts list are critical for safety. Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

## NOTE

The symbols UL, CSA, UK, EU, SEV, SS and XX <EXPORT> on the parts list and the schematic diagram mean followings respectively.

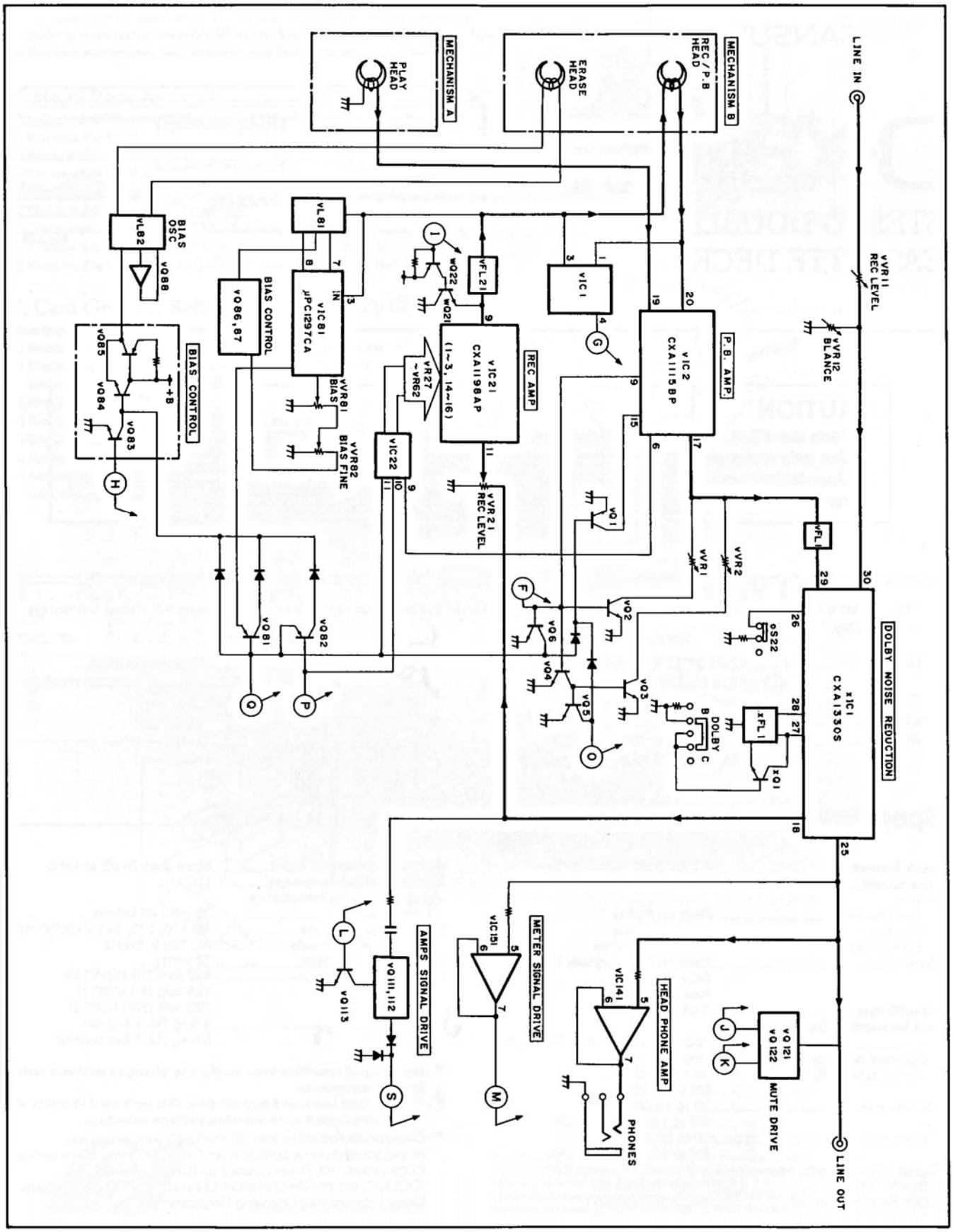
UL ..... Manufactured for U.S.A. market. (Underwriters Laboratories approved model.)
CSA ..... Manufactured for Canadian market.
UK ..... Manufactured for United Kingdom market.
EU ..... Manufactured for European market. (Except United Kingdom and Swiss market.)
SEV ..... Manufactured for Swiss market.
SS ..... Manufactured for Saudi Arabian market.
XX ..... Standard Version. <EXPORT>
NON MARK ... Common Parts.

## Specifications

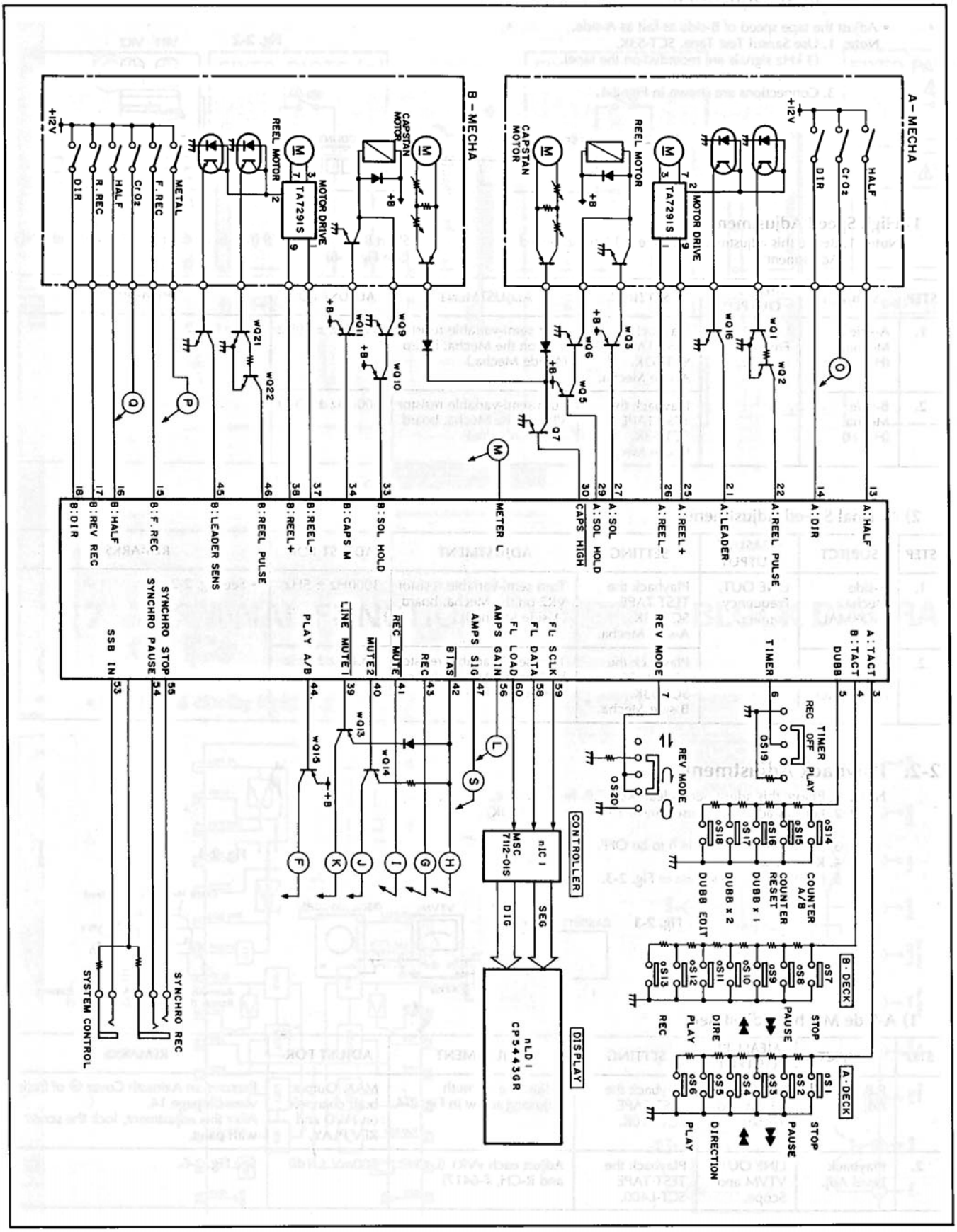
**Track format** ..... 4-track/2-channel system
**Tape speed** ..... 4.8 cm/sec
**Heads**
Rec/play head ..... Hard parmalloy
Play head ..... Hard parmalloy
Erase head ..... Double-gap ferrite
**Motor** ..... Capstan:Electronically controlled DC motor x2
Reels: DC motor x2
**Wow/flutter** ..... 0.06 % max (WRMS)
**Fast forwarding (rewinding) time** ..... Approx. 100 sec. (for C-60 tape)
**Frequency response** (-20 VU recording/playback)
Normal tape (LH) ..... 20 to 18,000 Hz (20 to 17,000 Hz ±3 dB)
Chrome tape ..... 20 to 19,000 Hz (20 to 18,000 Hz ±3 dB)
Metal tape ..... 20 to 20,000 Hz (20 to 19,000 Hz ±3 dB)
**Signal-to-noise ratio** (recording/playback with metal tape)
DOLBY NR OFF ..... Better than 58 dB
DOLBY-B NR ON ..... Better than 65 dB
DOLBY-C NR ON ..... Better than 75 dB
**Erasure rate (metal tape)** ..... More than 70 dB at 1kHz
**Recording bias frequency** ..... 105 kHz
**Input sensitivity/Impedance**
LINE IN (REC) ..... 70 mV / 40 kohms
**Power requirements** ..... AC 120, 220, 240 V (50/60 Hz)
For U.S.A. & Canada ..... AC 120 V, 60 Hz
**Power consumption** ..... 22 watts
**Dimensions** ..... 430 mm (16-15/16") W
125 mm (4-15/16") H
270 mm (10-11/16") D
**Weight** ..... 4.6 kg (10.1 lbs) net
5.6 kg (12.3 lbs) packed

* **Design and specifications subject to changes without notice for improvements.**
* **Due to local laws and regulations, this unit sold in some areas are not equipped with variable voltage selectors.**
* Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen. "DOLBY", the double-D symbol (DD) and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

# 1. BLOCK DIAGRAM 1-1. Audio Section



## 1-2. Control Section



# 2. ADJUSTMENTS

## 2-1. Tape Speed Adjustment

- Adjust the tape speed of B-side as fast as A-side.

**Note:** 1. Use Sansui Test Tape, SCT-S3K.
(3 kHz signals are recorded on the tape).
2. Set the Timer Switch to be PLAY.
3. Connections are shown in Fig. 2-1.

**Fig. 2-1**

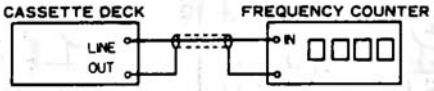
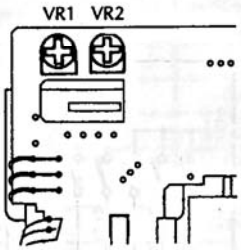



**Fig. 2-2**




### 1) High Speed Adjustment

**Note:** 1. Before this adjustment, regulate "1) Normal Speed Adjustment".

2. Short Between Point Ⓐ (JW56) on the F-6417 board and GND. (See Fig. 2-6)

| STEP | SUBJECT | MEASURE OUTPUT | SETTING | ADJUSTMENT | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|---|
| 1. | A-side Mecha. (HIGH) | LINE OUT, Frequency counter. | Playback the TEST TAPE SCT-S3K. A-side Mecha. | Turn semi-variable resistor VR1 on the Mecha. board (A-side Mecha.) | 6000Hz ± 10Hz | • See Fig. 2-2. |
| 2. | B-side Mecha. (HIGH) | | Playback the TEST TAPE SCT-S3K. B-side Mecha. | Turn semi-variable resistor VR1 on the Mecha. board (B-side Mecha.) | 6000Hz ± 10Hz | |

### 2) Normal Speed Adjustment

| STEP | SUBJECT | MEASURE OUTPUT | SETTING | ADJUSTMENT | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|---|
| 1. | A-side Mecha. (NORMAL) | LINE OUT, Frequency counter. | Playback the TEST TAPE SCT-S3K. A-side Mecha. | Turn semi-variable resistor VR2 on the Mecha. board (A-side Mecha.) | 3000Hz ± 5Hz | • See Fig. 2-2. |
| 2. | B-side Mecha. (NORMAL) | | Playback the TEST TAPE SCT-S3K. B-side Mecha. | Turn semi-variable resistor VR2 on the Mecha. board (B-side Mecha.) | 3000Hz ± 5Hz | |

## 2-2. Playback Adjustment

**Note:** 1. Before this adjustment, clean REC/P.B. head surface.
2. For this adjustment, use Sansui Test Tape, SCT-F10K, and SCT-L400.
3. Set the Dolby NR switch to be OFF.
4. Remove the Lid Ass'y.
5. Connections are shown in Fig. 2-3.

**Fig. 2-3**

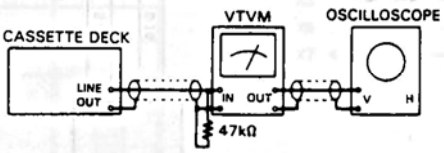
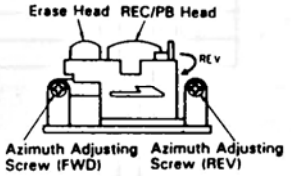



**Fig. 2-4**




### 1) A-Side Mecha. Adjustment

| STEP | SUBJECT | MEASURE OUTPUT | SETTING | ADJUSTMENT | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|---|
| 1. | P.B. Head Adj. | LINE OUT, VTVM and Scope. | Playback the TEST TAPE SCT-F10K. | Adjust the azimuth adjusting screw in Fig. 2-4. | MAX. Output both channels on FWD and REV PLAY. | Remove an Azimuth Cover ⑲ of front view on page 14. After this adjustment, lock the screw with paint. |
| 2. | Playback Level Adj. | LINE OUT, VTVM and Scope. | Playback the TEST TAPE SCT-L400. | Adjust each vVR1 (L-CH and R-CH, F-6417) | 500mV ± 1dB | See Fig. 2-6. |

### 2) B-Side Mecha. Adjustment

| STEP | SUBJECT | MEASURE OUTPUT | SETTING | ADJUSTMENT | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|---|
| 1. | REC/P.B. Head Adj. | LINE OUT, VTVM and Scope. | Playback the TEST TAPE SCT-F10K. | Adjust the azimuth adjusting screw in Fig. 2-4. | MAX. Output both channels on FWD and REV PLAY. | Remove an Azimuth Cover ⑱ of front view on page 14. After this adjustment, lock the screw with paint. |
| 2. | Playback Level Adj. | LINE OUT, VTVM and Scope. | Playback the TEST TAPE SCT-L400. | Adjust each vVR2 (L-CH and R-CH, F-6417) | 500mV ± 1dB | See Fig. 2-6. |

## 2-3. Bias Adjustment

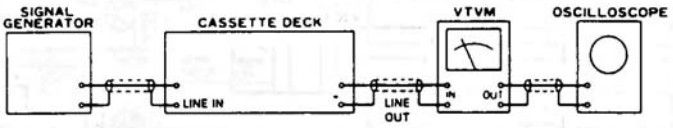
**Note:** 1. BIAS control volume ..... Center click position.
2. BALANCE control volume ..... Center click position.
3. REC LEVEL volume ..... Max.
4. DOLBY NR switch ..... OFF
5. MPX FILTER switch ..... OFF

| STEP | SUBJECT | MEASURE OUTPUT | SETTING | ADJUSTMENT | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|---|
| 1. | Bias Frequency Adj. | Between Point Ⓐ of JP5 and GND AC Volt Meter and Frequency counter. | 1. Load the TEST TAPE SCT-MA<br>2. Push the REC and PLAY button. | Turn the core of vL82 (F-6417) | 105kHz ± 1kHz | See Fig. 2-6. |
| 2. | Dolby HX Trans. Adj. | Between TEST Point (TP +, TP –) vR89 AC Volt Meter. | Same as above. | Turn the core of vL81 (L-CH, R-CH) | Min. output | See Fig. 2-6. |

## 2-4. REC Level & Frequency Response Adjustment

**Note:** 1. Connections are shown in Fig. 2-5.
2. Set the Dolby NR switch to be OFF.
3. REC Level volume ..... Max.
4. BIAS control volume ..... Center click position.
5. BALANCE control volume ..... Center click position.

**Fig. 2-5**



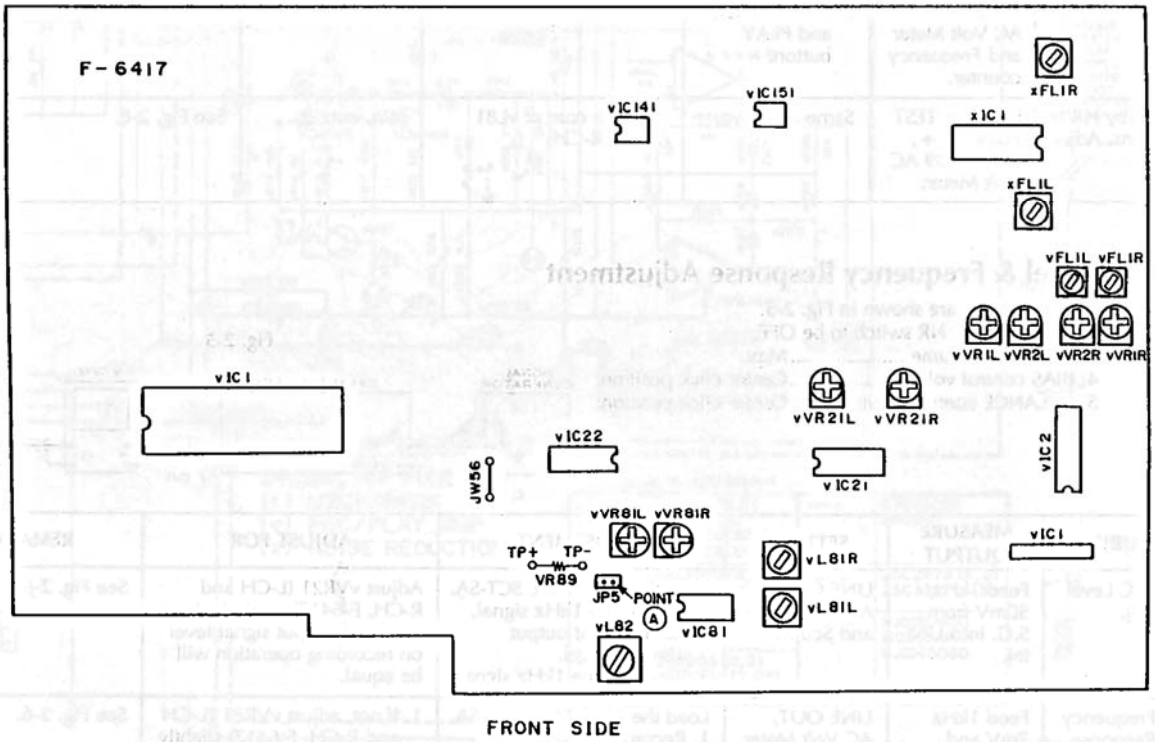

| STEP | SUBJECT | MEASURE OUTPUT | SETTING | ADJUSTMENT | ADJUST FOR | REMARKS |
|---|---|---|---|---|---|---|
| 1. | REC Level Adj. | Feed 1kHz, 50mV from S.G. into LINE IN. | LINE OUT, AC Volt Meter and Scope. | Load the TEST TAPE SCT-SA.<br>1. Record the 1kHz signal.<br>2. Confirm that output terminal level.<br>3. Playback the 1kHz signal. | Adjust vVR21 (L-CH and R-CH, F-6417) until playback level and output signal level on recording operation will be equal. | See Fig. 2-6. |
| 2. | Frequency Response Adj. | Feed 1kHz 7mV and 12.5kHz 7mV from S.G. into LINE IN. | LINE OUT, AC Volt Meter and Scope. | Load the TEST TAPE SCT-SA.<br>1. Record the 1kHz and 12.5kHz signals from S.G.<br>2. Playback the 1kHz and 12.5kHz signals, then confirm 12.5kHz signal level in less than 1kHz signal level ± 3dB on AC Volt Meter. | 1. If not, adjust vVR81 (L-CH and R-CH, F-6417) slightly untill the 12.5kHz signal level in less than 1kHz signal level ± 3dB on AC Volt Meter. | See Fig. 2-6. |

### ◆ List of Sansui Test Tape

| Name of TEST TAPE | Recorded Frequency | Description | Equivalent To |
|---|---|---|---|
| SCT-F40 | 40 Hz | Playback Frequency Response Check | – |
| SCT-F1K | 1 kHz | High Frequency Equialization Check | – |
| SCT-F10K | 10 kHz | REC/PB Head Adjustment | – |
| SCT-L400N | 400 Hz | Playback Level and Indicator Level Adjustment | – |
| SCT-S3K | 3 kHz | Speed Check and Wow & Flutter Check | – |
| *SCT-AD (NORMAL) | – | Recording Bias Adjustment | TDK AD |
| *SCT-SA (HIGH) | – | REC/PB Level Adjustment | TDK SA |
| *SCT-MA (METAL) | – | Frequency Response Check | TDK MA |

•**Note:** Some reference tapes marked * are not supplied.
As these are equivalent to ones indicated above, please obtain these blank tapes on your side as possible.

## Fig. 2-6 F-6417 Adjustment Points



# 3. PARTS LIST OF BOARD

1. Some printed circuit board are not supplied assembled. To separate these in this Parts list, the stock numbers are not indicated for these boards. However, stock numbers for indivisual parts are indicated.
2. Since some capacitors and resistors are omitted from parts lists in this Parts List, refer to the Common Parts List for capacitors and resistors, which was issued on June 1987.
3. Abbreviations in this Parts List are as follows.

**•Abbreviations List**

| | | | |
|---|---|---|---|
| C.R. | : Carbon Resistor | E.B. | : Bi-Polar Electrolytic Capacitor |
| S.R. | : Solid Resistor | | |
| Ce.R. | : Cement Resistor | E.B.L | : Low Leak Bi-Polar Electrolytic Capacitor |
| M.R. | : Metal Film Resistor | | |
| F.R. | : Fusing Resistor | F.C. | : Film Capacitor |
| N.I.R. | : Non-Inflammable Resistor | M.P. | : Metalized Paper Capacitor |
| A.R. | : Array Resistor | P.C. | : Polystyrene Capacitor |
| C.C. | : Ceramic Capacitor | M.M.C. | : Metalized Mylar Capacitor |
| C.T. | : Ceramic Capacitor, Temperature Compensation | A.C. | : Array Capacitor |
| | | V.R. | : Variable Resistor |
| E.C. | : Elecrolytic Capacitor | S.V.R. | : Semi Variable Resistor |
| E.L. | : Low Leak Electrolytic Capacitor | SW. | : Switch |
| | | Chip R. | : Chip Resistor |
| Ta.C. | : Tantalum Capacitor | Chip C. | : Chip Capacitor |

## 3-1. F-6417 Main Board <Stock No. 01241201>

<F-6417>

| Parts No. | | Stock No. | Description |
|---|---|---|---|
| •Transistor | | | |
| mQ1 | | 03083901 | 2SD313HP |
| | or | 49349400 | 2SD2012 |
| mQ2 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| mQ3 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| mQ4 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| mQ5 | | 46581601 | 2SA992 |
| mQ6 | | 46367001 | 2SA1115 |
| | or | 46367201 | 2SA1048 |
| | or | 48058601 | 2SA933S |
| mQ7 | | 46367001 | 2SA1115 |
| | or | 46367201 | 2SA1048 |
| | or | 48058601 | 2SA933S |
| •IC | | | |
| mIC1 | | 07183500 | μPC78M05H |
| | or | 49440400 | NJM78M05FA |
| •Diode | | | |
| mD1 | | 48123600 | 11E2 |
| mD2 | | 48123600 | 11E2 |
| mD3 | | 48123600 | 11E2 |
| mD4 | | 48123600 | 11E2 |
| mD5 | | 46464100 | 1SS133 |
| mD6 | | 03117700 | 10E-2 |
| mD7 | | 03117700 | 10E-2 |
| mD8 | | 48123600 | 11E2 |
| mD9 | | 48123600 | 11E2 |
| mD10 | | 48123600 | 11E2 |
| mD11 | | 48123600 | 11E2 |
| mD12 | | 46464100 | 1SS133 |
| •Zener Diode | | | |
| mDZ1 | | 48555100 | MTZ13A |
| | or | 48634700 | RD13B1 |
| mDZ2 | | 48637700 | RD27B1 |
| | or | 48637800 | RD27B2 |
| | or | 49516300 | MTZJ27A |
| | or | 49516400 | MTZJ27B |
| mDZ3 | | 48551200 | MTZ3.9A |
| | or | 48551300 | MTZ3.9B |
| | or | 48629500 | RD3.9B |
| mDZ4 | | 48552100 | MTZ5.1B |
| | or | 48630800 | RD5.1B2 |
| ⚠ mR11 | | 46624300 | 100Ω 2W N.I.R. |
| oJ2 | | 48985400 | Jack, SYSTEM CONTROL |
| oJ3 | | 49436400 | Jack, SYNCHRO REC |
| oJ1 | | 48528500 | 4P Terminal, LINE IN/OUT |
| •Transistor | | | |
| vQ1 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| vQ2 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| vQ3 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| vQ4 | | 46719900 | DTC124ES |
| | or | 49388200 | RN1203 |
| vQ5 | | 46719900 | DTC124ES |
| | or | 49388200 | RN1203 |
| vQ6 | | 46719900 | DTC124ES |
| | or | 49388200 | RN1203 |
| vQ21 | | 46540801 | 2SC2878 |
| | or | 46604301 | 2SC3327 |
| vQ22 | | 46367001 | 2SA1115 |
| | or | 46367201 | 2SA1048 |
| | or | 48058601 | 2SA933S |
| vQ23 | | 46719800 | DTA124ES |
| | or | 49390400 | RN2203 |
| vQ81 | | 46367001 | 2SA1115 |
| | or | 46367201 | 2SA1048 |
| | or | 48058601 | 2SA933S |
| vQ82 | | 46367001 | 2SA1115 |
| | or | 46367201 | 2SA1048 |
| | or | 48058601 | 2SA933S |
| vQ83 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| vQ84 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| vQ85 | | 46614001 | 2SA1283 |
| | or | 48000801 | 2SA934 |

to be Continued

<F-6417>

| Parts No. | | Stock No. | Description |
|---|---|---|---|
| vQ86 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| vQ87 | | 49353500 | DTB114ES |
| vQ88 | | 46614101 | 2SC3243 |
| | or | 48000901 | 2SC2060 |
| vQ111 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| vQ112 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| vQ113 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| vQ121 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| vQ122 | | 46540801 | 2SC2878 |
| | or | 46604301 | 2SC3327 |
| •IC | | | |
| vIC1 | | 49323500 | µPC1330HA |
| vIC2 | | 49524000 | CXA1115BP |
| vIC21 | | 49362500 | CXA1198AP |
| vIC22 | | 49362200 | TC4051BP |
| vIC81 | | 49323400 | µPC1297CA |
| vIC141 | | 03607700 | NJM4558D |
| | or | 49263900 | NJM2068D |
| | or | 49541300 | M5218AP |
| vIC151 | | 03607700 | NJM4558D |
| | or | 49263900 | NJM2068D |
| | or | 49541300 | M5218AP |
| •Diode | | | |
| vD1 | | 46464100 | 1SS133 |
| vD2 | | 46464100 | 1SS133 |
| vD21 | | 46464100 | 1SS133 |
| vD81 | | 46464100 | 1SS133 |
| vD82 | | 46464100 | 1SS133 |
| vD83 | | 46464100 | 1SS133 |
| vD111 | | 46464100 | 1SS133 |
| vD112 | | 46464100 | 1SS133 |
| vD151 | | 46464100 | 1SS133 |
| •Zener Diode | | | |
| vDZ1 | | 48552700 | MTZ6.2B |
| | or | 48552800 | MTZ6.2C |
| | or | 48552900 | MTZ6.8A |
| | or | 48631600 | RD6.2B2 |
| | or | 48631700 | RD6.2B3 |
| | or | 48631900 | RD6.8B1 |
| vC3 | | 48663200 | 330pF 50V C.C. |
| vC4 | | 48663200 | 330pF 50V C.C. |
| vFL1 | | 48366300 | Trap Filter |
| vFL21 | | 48363500 | Trap Coil |
| vL81 | | 49323600 | Coil, Step Up |
| vL82 | | 49323700 | Coil, Bias OSC |
| vVR1 | | 49367200 | 22kΩ S.V.R., P.B. Level (A-Mecha.) |
| vVR2 | | 49367200 | 22kΩ S.V.R., P.B. Level (B-Mecha.) |
| vVR21 | | 49367200 | 22kΩ S.V.R., REC Level Adj. |
| vVR81 | | 49367300 | 47kΩ S.V.R., Bias |
| ⚠ vR19 | | 46229500 | 270Ω 1/2W N.I.R. |
| ⚠ vR89 | | 46227800 | 10Ω 1/2W N.I.R. |

<F-6417>

| Parts No. | | Stock No. | Description |
|---|---|---|---|
| •Transistor | | | |
| wQ1 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| wQ2 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| wQ3 | | 46719800 | DTA124ES |
| | or | 49390400 | RN2203 |
| wQ4 | | 46719800 | DTA124ES |
| | or | 49390400 | RN2203 |
| wQ5 | | 46719800 | DTA124ES |
| | or | 49390400 | RN2203 |
| wQ6 | | 46359801 | 2SC2001 |
| wQ7 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| wQ9 | | 46359801 | 2SC2001 |
| wQ10 | | 46719800 | DTA124ES |
| | or | 49390400 | RN2203 |
| wQ11 | | 46719800 | DTA124ES |
| | or | 49390400 | RN2203 |
| wQ12 | | 46719800 | DTA124ES |
| | or | 49390400 | RN2203 |
| wQ13 | | 46719800 | DTA124ES |
| | or | 49390400 | RN2203 |
| wQ14 | | 46719800 | DTA124ES |
| | or | 49390400 | RN2203 |
| wQ15 | | 46719800 | DTA124ES |
| | or | 49390400 | RN2203 |
| wQ16 | | 46719900 | DTC124ES |
| | or | 49388200 | RN1203 |
| wQ17 | | 46719900 | DTC124ES |
| | or | 49388200 | RN1203 |
| wQ18 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| wQ19 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| wQ21 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| wQ22 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| •IC | | | |
| wIC1 | | 49560100 | TMP47C860N-P107 |
| wXO1 | | 49357500 | Quartz Element |
| •Diode | | | |
| wD1 | | 46464100 | 1SS133 |
| wD2 | | 46464100 | 1SS133 |
| wD3 | | 46464100 | 1SS133 |
| wD4 | | 46464100 | 1SS133 |
| wD5 | | 46464100 | 1SS133 |
| wD6 | | 46464100 | 1SS133 |
| wD7 | | 46464100 | 1SS133 |
| wD8 | | 46464100 | 1SS133 |
| wD9 | | 46464100 | 1SS133 |
| •Zener Diode | | | |
| wDZ1 | | 48552100 | MTZ5.1B |
| | or | 48630800 | RD5.1B2 |
| ⚠ wR27 | | 46623900 | 47Ω 2W N.I.R. |
| ⚠ wR30 | | 46623900 | 47Ω 2W N.I.R. |

<F-6417>

| Parts No. | | Stock No. | Description |
|---|---|---|---|
| •Transistor | | | |
| xQ1 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| xQ2 | | 46367101 | 2SC2603 |
| | or | 46367301 | 2SC2458 |
| | or | 48058801 | 2SC1740S |
| •IC | | | |
| xIC1 | | 49522700 | CXA1330S |
| xC5 | | 49522600 | 0.56µF 50V E.C. |
| xFL1 | | 49370600 | Dolby Filter |

## 3-2. F-6418 Timer Switch Board

| Parts No. | Stock No. | Description |
|---|---|---|
| oS19 | 46178400 | Slide SW., TIMER |

## 3-3. F-6420 Control Keys & Display Board

<Stock No. 01241601>

| Parts No. | Stock No. | Description |
|---|---|---|
| •IC | | |
| nIC1 | 49194500 | MSC7112-01SS |
| nLD1 | 49537000 | FL Display, CP5443GR |
| oS14 | 49326300 | Push SW., COUNTER A/B |
| oS15 | 49326300 | Push SW., COUNTER RESET |
| oS16 | 49326300 | Push SW., DUBBING x 1 |
| oS17 | 49326300 | Push SW., DUBBING x 2 |
| oS18 | 49326300 | Push SW., DUBBING EDIT |
| oS20 | 46178400 | Slide SW., REV. MODE |
| oS21 | 46178400 | Slide SW., DOLBY-NR |
| oS22 | 46563500 | Push SW., MPX FILTER |
| vVR11 | 49326400 | 50kΩ (B)x2 V.R., REC LEVEL |
| vVR12 | 49556100 | 100kΩ V.R., BALANCE |
| vVR82 | 49556000 | 10kΩ (B) V.R., BIAS |

## 3-4. F-6421 A-Deck Function Keys Board

| Parts No. | Stock No. | Description |
|---|---|---|
| oS1 | 49326300 | Push SW., ▭ |
| oS2 | 49326300 | Push SW., ▯▯ |
| oS3 | 49326300 | Push SW., ▶▶ |
| oS4 | 49326300 | Push SW., ◀◀ |
| oS5 | 49326300 | Push SW., DIRECTION |
| oS6 | 49326300 | Push SW., PLAY |

## 3-5. F-6422 B-Deck Function Keys Board

| Parts No. | Stock No. | Description |
|---|---|---|
| oS7 | 49326300 | Push SW., ▭ |
| oS8 | 49326300 | Push SW., ▯▯ |
| oS9 | 49326300 | Push SW., ▶▶ |
| oS10 | 49326300 | Push SW., ◀◀ |
| oS11 | 49326300 | Push SW., DIRECTION |
| oS12 | 49326300 | Push SW., PLAY |
| oS13 | 49326300 | Push SW., REC/MUTE |

## 3-6. F-6423 Head Phone Jack Board

| Parts No. | Stock No. | Description |
|---|---|---|
| oJ4 | 49495100 | Jack, PHONES |

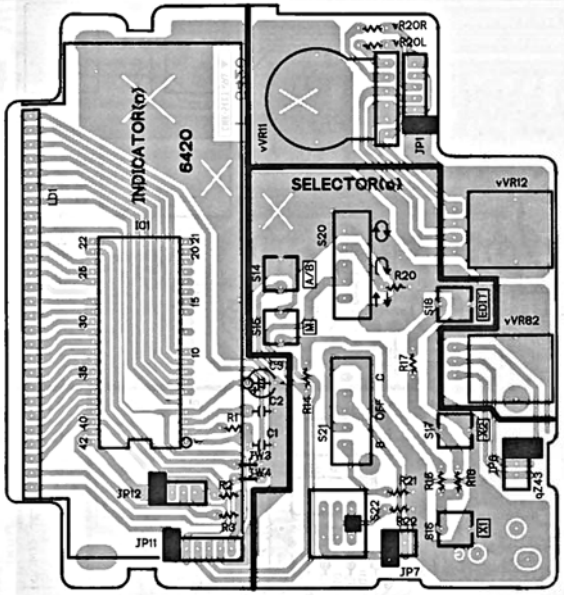
## 3-7. F-6424 Power Supply Primary Board

| Parts No. | | Stock No. | Description |
|---|---|---|---|
| ⚠ pC1 | | 48733500 | 0.01µF 400V C.C. |
| ⚠ | or | 49538100 | 0.01µF 400V C.C. |

# 4. PARTS LOCATION ON BOARD

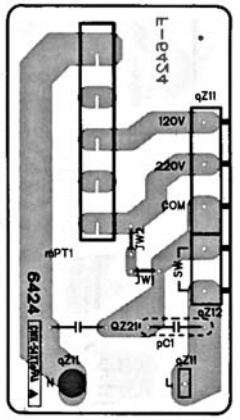
## 4-1. F-6420 Control Keys & Display Board

Component Side



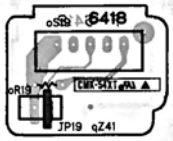

## 4-2. F-6424 Power Supply Primary Board

Component Side



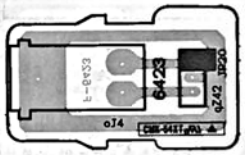

## 4-3. F-6418 Timer Switch Board

Component Side



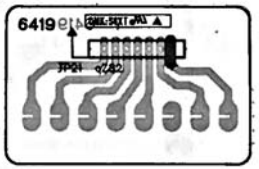

## 4-4. F-6423 Head Phone Jack Board

Component Side



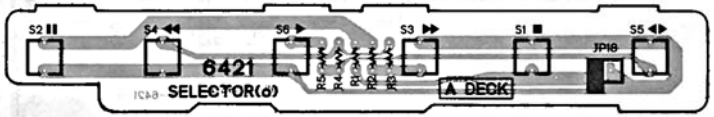

## 4-5. F-6419 Connector Board

Component Side



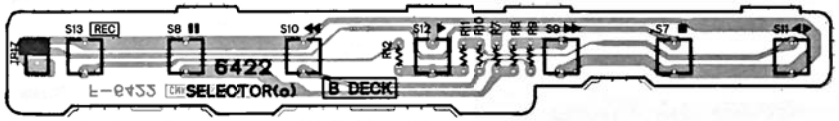

## 4-6. F-6421 A-Deck Function Keys Board

Component Side

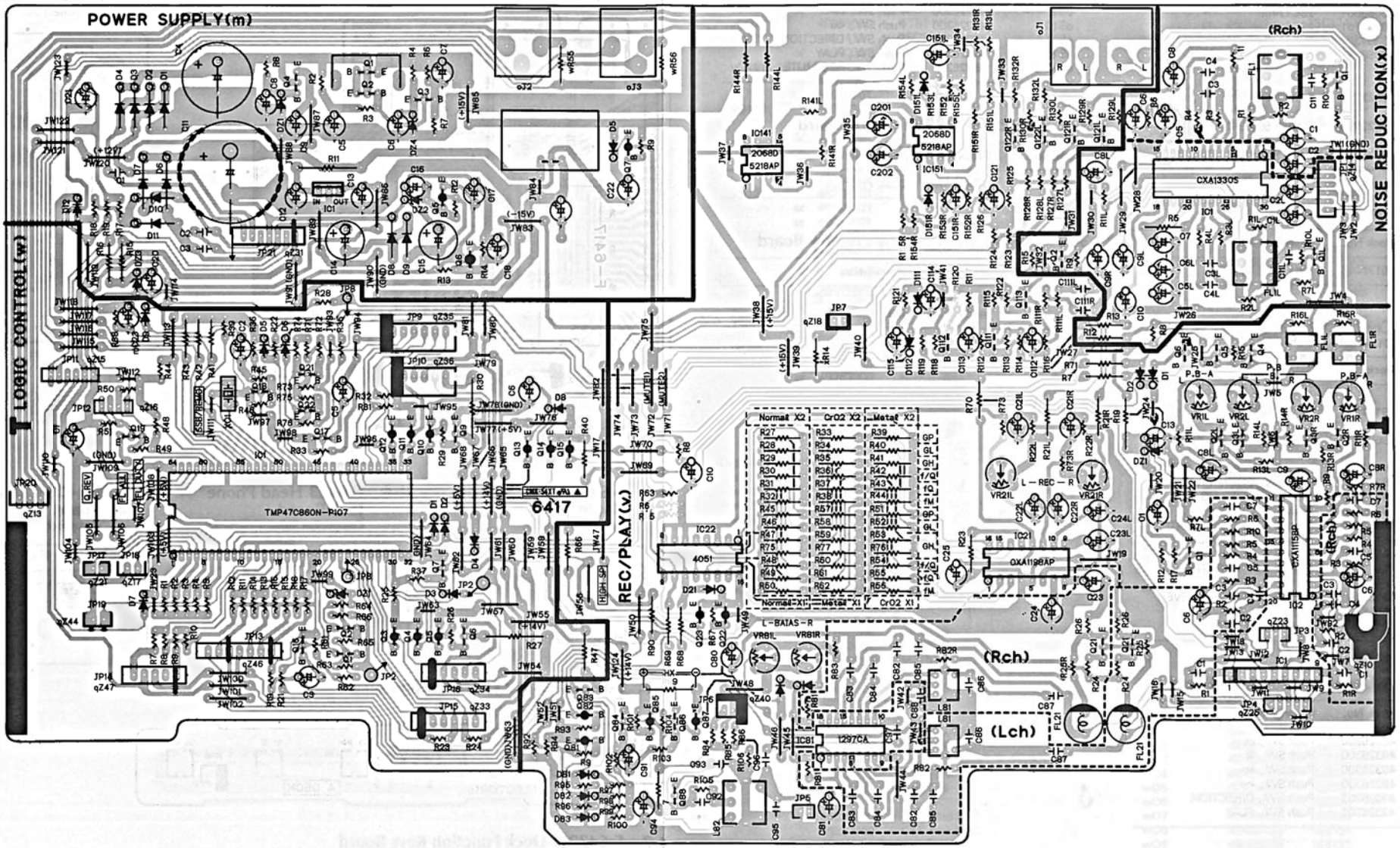



## 4-7. F-6422 B-Deck Function Keys Board

Component Side

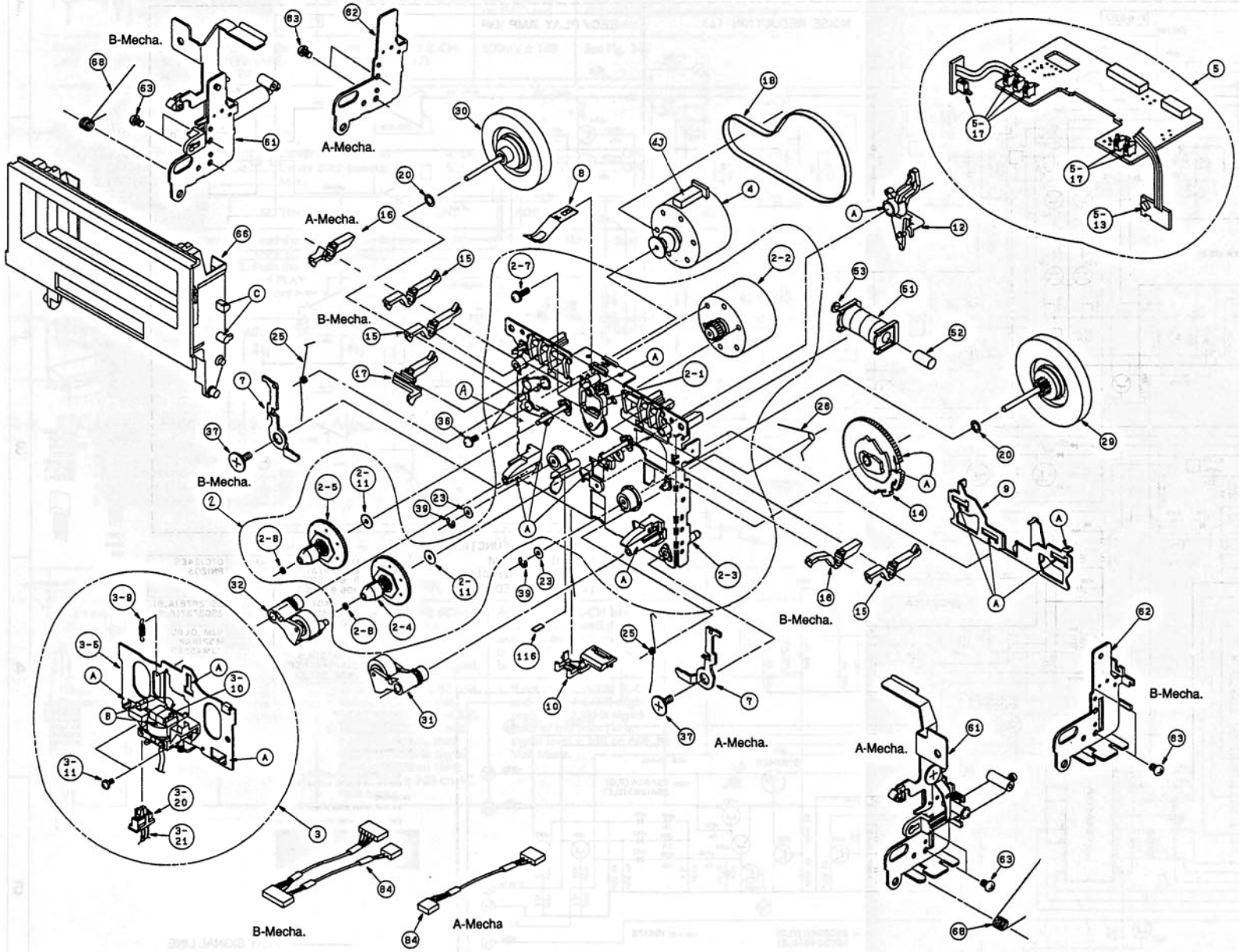


## 4-8. F-6417 Main Board
**Component Side**



# 5. EXPLODED VIEW OF MECHANISM AND PARS LIST

• Though every Part included in mechanism ass'y is numbered in exploded View, Parts Unlisted in parts list are not supplied.

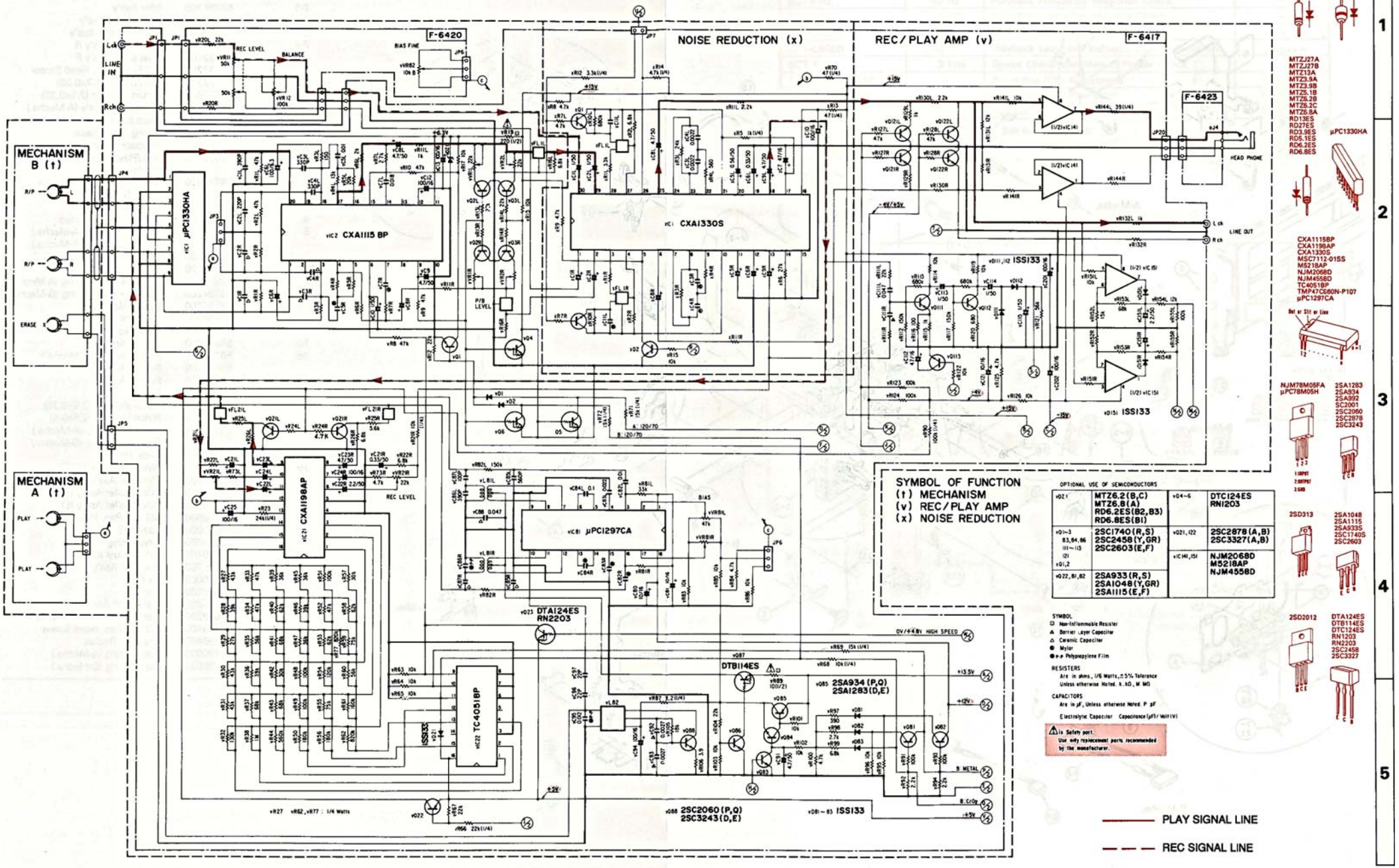



**Parts List**

| Parts No. | Stock No. | Description |
|---|---|---|
| 2 | ———— | Main chassis Ass'y |
| 2-1 | 58731700 | Idler Ass'y |
| 2-2 | 58731800 | Reel Motor Ass'y |
| 2-3 | ———— | Chassis Base Ass'y |
| 2-4 | 58732000 | Reel Base Ass'y R |
| 2-5 | 58732100 | Reel Base Ass'y F |
| 2-7 | 58732200 | M2.6x6.4 Pan. Head Screw |
| 2-8 | 58732300 | Slit Washer (1.7x0.25) |
| 2-11 | 58732400 | Thrust Washer (2.1x0.25) |
| 3 | 58736900 | Head Base Ass'y (A-Mecha.) |
| | 58897800 | Head Base Ass'y (B-Mecha.) |
| 3-9 | 58733100 | Spring, Head Base |
| 3-10 | 58897900 | Playback Head (A-Mecha.) |
| | 58898000 | Rec./Play/Erase, Head Ass'y (B-Mecha.) |
| 3-11 | 58737200 | M2x5 Pan. Tapping Screw |
| 3-20 | 58891000 | Photo Sensor SPI-320BC |
| 3-21 | 58737400 | QS Lead Wire |
| 4 | 58898100 | Motor Ass'y, Capstan |
| 5 | 58898200 | P.C.B. (Control), (A-Mecha.) |
| | 58898300 | P.C.B. (Control), (B-Mecha.) |
| 5-13 | 58733900 | Photo Sensor SPI-335-34-C |
| 5-17 | 58734000 | Push switch |
| 8 | 58898500 | Cassette Hold Spring (A-Mecha.) |
| | 58734200 | Cassette Hold Spring (B-Mecha.) |
| 10 | 58738000 | Lead Holder |
| 12 | 58734300 | Play Arm |
| 14 | 58898600 | Cam Gear |
| 15 | 58898700 | Switch Arm A |
| 16 | 58734600 | Switch Arm B (A-Mecha.) |
| | 58898800 | Switch Arm B (B-Mecha.) |
| 17 | 58734700 | Switch Arm C |
| 18 | 58738100 | Belt |
| 20 | 58734900 | Nylon Washer (2.6x0.25) |
| 23 | 58735000 | Nylon Washer (2.6x0.5) |
| 25 | 58735100 | Eject Spring (L), (A-Mecha.) |
| | 58898900 | Eject Spring (R), (B-Mecha.) |
| 26 | 58735200 | Slide Spring |
| 29 | 58735300 | Flywheel Ass'y (FWD) |
| 30 | 58738200 | Flywheel Ass'y (REV) |
| 31 | 58735400 | Pinch Roller Ass'y (R) |
| 32 | 58891400 | Pinch Roller Ass'y (L) |
| 36 | 58735500 | M2.6x5 Pan. Head Screw |
| 37 | 58899000 | Special Screw |
| 39 | 58735700 | E-type Ring |
| 43 | 58899100 | Holder Cushion |
| 51 | 58735900 | Solenoid Ass'y |
| 52 | 58736000 | Fix Core |
| 53 | 58736100 | Plunger |
| 61 | 58736200 | Plate Hold Ass'y (A-Mecha.) |
| | 58899200 | Plate Hold Ass'y (B-Mecha.) |
| 63 | 58736400 | M2.6x4 Pan. Head Screw |
| 66 | 58899400 | Cassette Pocket |
| 68 | 58736600 | Door Spring (A-Mecha.) |
| | 58899500 | Door Spring (B-Mecha.) |

# 6. SCHEMATIC DIAGRAM 6-1. REC Amp. Section

* Design and specifications subject to changes without noitice for improvements.




10E2 11E2 1SS133

MTZJ27A MTZJ27B MTZ13A MTZ3.9A MTZ3.9B MTZ5.1B MTZ6.2B MTZ8.2C MTZ6.8A RD13ES RD27ES RD3.9ES RD5.1ES RD6.2ES RD6.8ES

µPC1330HA

CXA1115BP CXA1198AP CXA1330S MSC7112-01SS M5218AP NJM2068D NJM4558D TC4051BP TMP47C680N-P107 µPC1297CA

Dual or Slot or Line

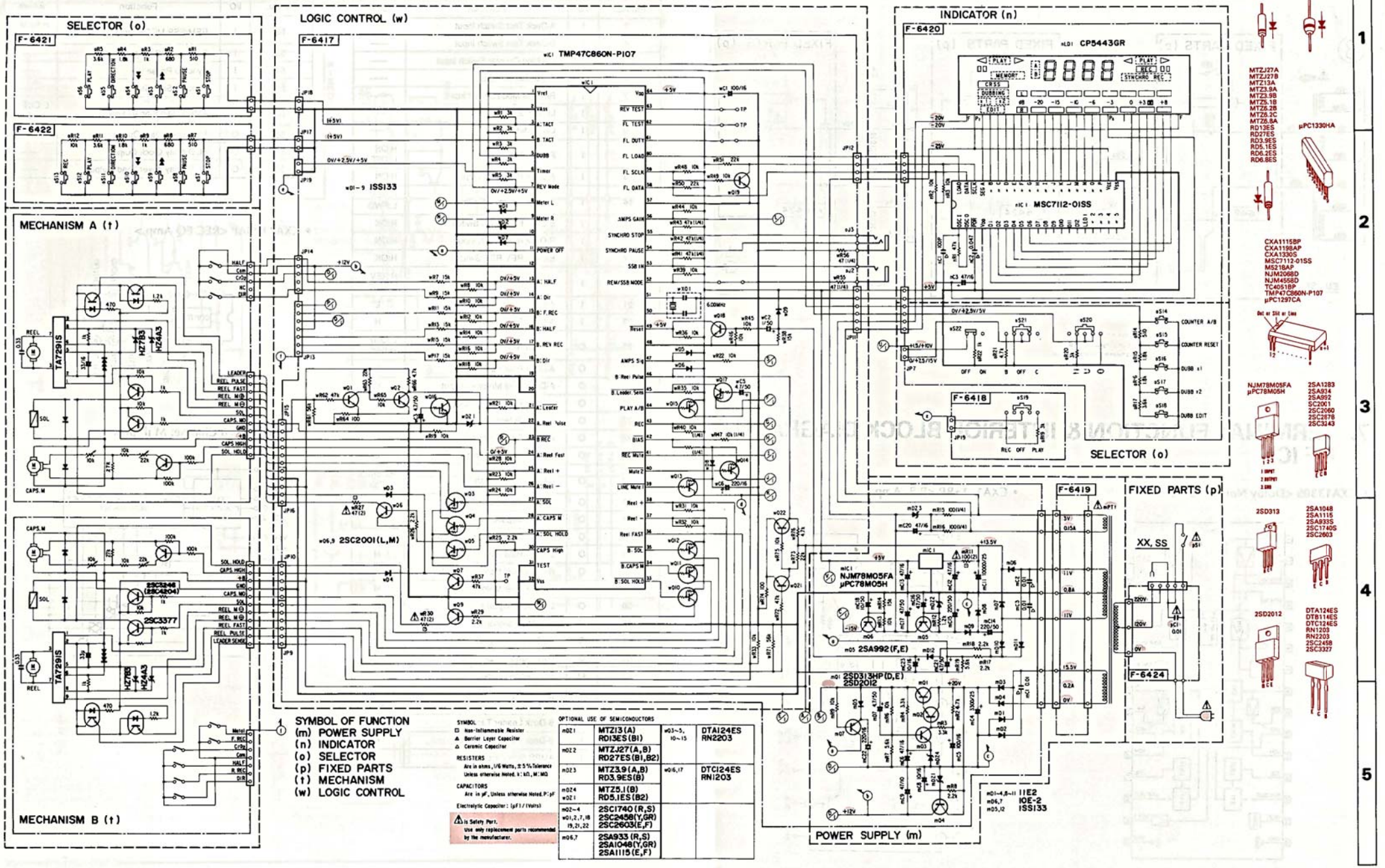
NJM78M05FA µPC78M05H 2SA1283 2SA934 2SA992 SC2001 2SC2060 2SC2878 2SC3243

2SD313 2SA1048 2SA1115 2SA933S 2SC1740S 2SC2603

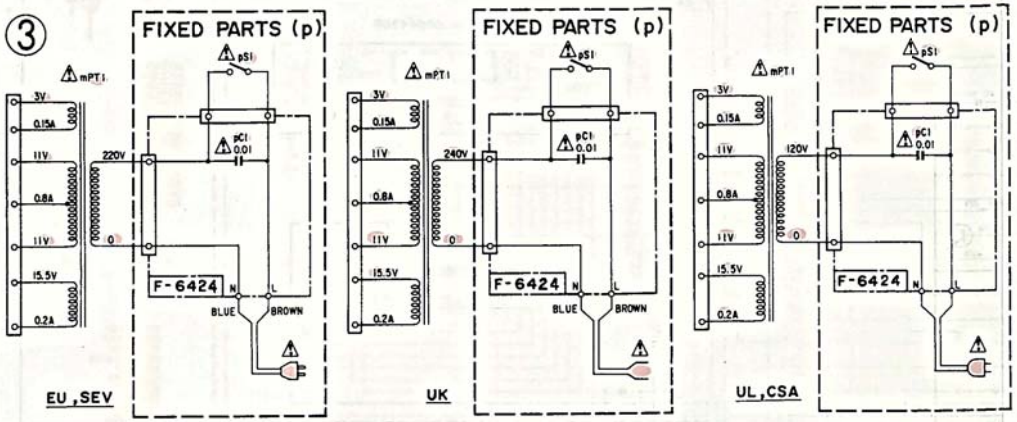
2SD2012 DTA124ES DTB114ES DTC124ES RN1203 RN2203 2SC2458 2SC3327

## 6-2. Control Section

* Design and specifications subject to changes without noitice for improvements.



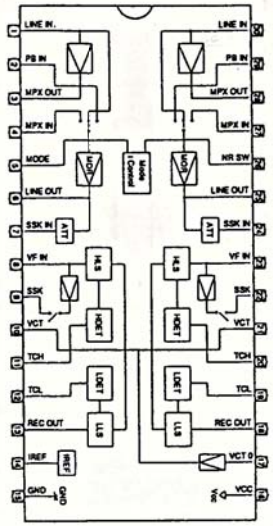
## 6-3. Power Supply Section



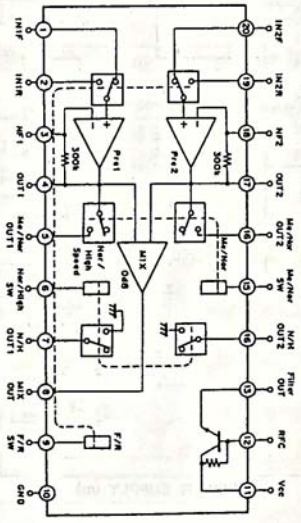

⚠ is Safety Part.
Use only replacement parts recommended by manufacturer

# 7. TERMINAL FUNCTION & INTERIOR BLOCK DIAGRAM OF ICs

• **CXA1330S <Dolby Noise Reduction>**



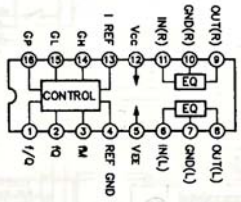

• **CXA1115BP <P.B. Amp.>**



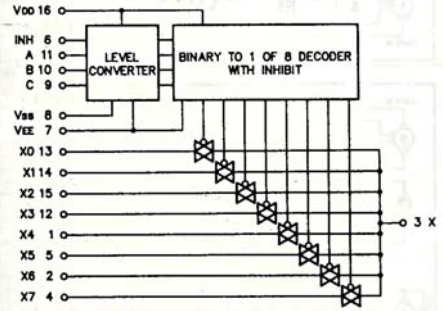

• **Terminal Function of TMP47C860N-P107 (Micro computer)**

| Pin No. | I/O | Function | Active |
|---|---|---|---|
| 3 | I | A-Deck Tact Switch Input | —— |
| 4 | I | B-Deck Tact Switch Input | —— |
| 5 | I | Dubbing Counter Switch Input | —— |
| 6 | I | Timer Switch Input | —— |
| 7 | I | Reverse Mode Switch Input | —— |
| 8 | I | Level Meter (L) | —— |
| 9 | I | Level Meter (R) | —— |
| 11 | I | Power off/in | H:ON L:OFF |
| 13 | I | A-Deck Half Switch Input | H:ON |
| 14 | I | A-Deck Direction Switch | H:REV L:FWD |
| 15 | I | B-Deck FWD REC Switch | H:OK |
| 16 | I | B-Deck Half Switch Input | H:ON |
| 17 | I | B-Deck REV REC Switch | H:OK |
| 18 | I | B-Deck REC Output | H:REV L:FWD |
| 21 | I | A-Deck Leader Tape in | L |
| 22 | I | A-Deck Reel Pulse | H |
| 23 | O | B-Deck REC Output | L:Only H:REC |
| 24 | O | A-Deck Reel Fast Output | H |
| 25 | O | A-Deck Reel Motor + Output | H |
| 26 | O | A-Deck Reel Motor – Output | H |
| 27 | O | A-Deck Solenoid Signal Output | L |
| 28 | O | A-Deck Capstan Motor | L |
| 29 | O | A-Deck Solenoid Hold | L |
| 30 | O | Capstan Motor High | H:Normal L:High |
| 33 | O | B-Deck Solenoid Hold | L |
| 34 | O | B-Deck Capstan Motor | L |
| 35 | O | B-Deck Solenoid Signal Output | L |
| 36 | O | B-Deck Reel Fast | H |
| 37 | O | B-Deck Reel Motor – Output | H |
| 38 | O | B-Deck Reel Motor + Output | H |
| 39 | O | Line Mute Signal 1 | H |
| 40 | O | Line Mute Signal 2 | H |
| 41 | O | REC Mute Signal Output | H |
| 42 | O | Bias Signal Output | L |
| 43 | O | REC Signal Output | H |
| 44 | O | Play A/B Signal Output | L:A H:B |
| 45 | I | B-Deck Leader Tape in | L |
| 46 | I | B-Deck Reel Pulse Input | H |
| 47 | I | AMPS Signal Input | L |
| 52 | I | REM/SSB MODE Input | H:REM L:SSB |
| 53 | I | Remocon/SSB Input | —— |
| 54 | I | Synchro Pause in | —— |
| 55 | I | Synchro Start/Stop in | —— |
| 56 | O | AMPS Gain Signal Output | L:CUE REVIEW |
| 58 | O | FL Display Data Output | —— |
| 59 | O | FL Display Clock Output | —— |
| 60 | O | FL Display driver Load Output | —— |

• **CXA1198AP <REC EQ Amp.>**




• **TC4051BP <8 Channel Multiplex>**

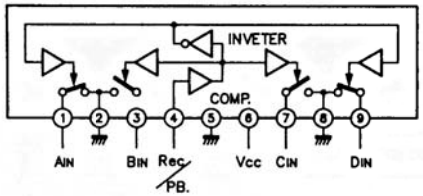


• **Terminal Function of MSC7112-01SS (VF Display Controller)**

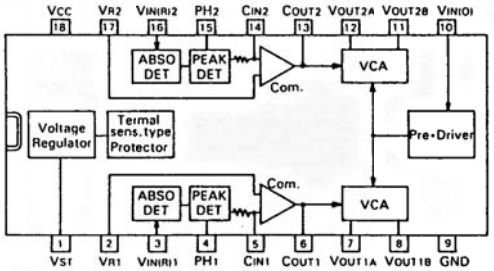
| Pin No. | Part | I/O | Function |
|---|---|---|---|
| 4 | $V_{DD}$ | — | $V_{DD}$-$V_{SS}$ Power supply for internal logic. |
| 22 | $V_{SS}$ | — | |
| 23 | $V_{EE}$ | — | $V_{DD}$-$V_{EE}$ Power supply for VF drive circuit logic. |
| 41 | DATA IN | I | Indication data input of the shift resistor. |
| 40 | S CLK | I | Shift clock for the shift resistor. The data is shifted when the SCLK is tuned off. |
| 42 | LOAD | I | Latch clock of the indication data. The data is throughput at the "H" level of the LOAD, and the data just before the "H" level is latched at the "L" level. |

| Pin No. | Part | I/O | Function |
|---|---|---|---|
| 3 | POR | I | Reset input terminal for the internal logic when turning on the power supply. |
| 1 | OSC I | I | Oscillation circuit input terminal. |
| 2 | OSC O | O | Oscillation circuit output terminal. |
| 24~39 | SEG A~P | O | VF indication tube drive output. |
| 5~16 | D1~D12 | O | VF light indication tube drive output. |
| 17~21 | LED 1~ LED 5 | O | LED drive output. |

• **μPC1330HA <Selector>**




• **μPC1297CA <Dolby HX PRO>**

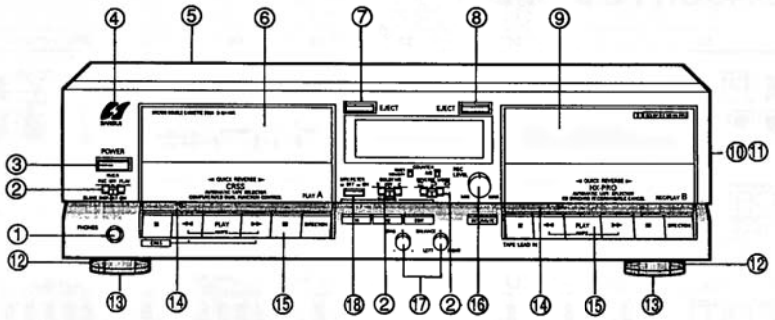



♦ **Terminal Function <μPC1297CA>**

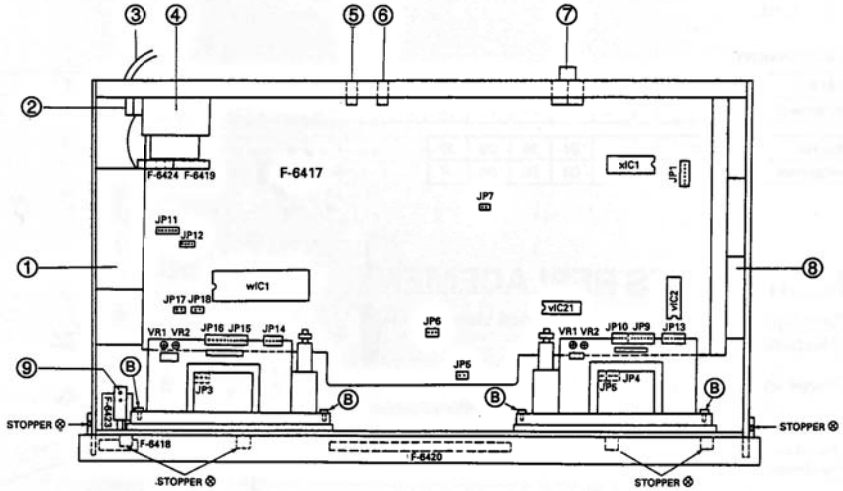
| Pin No. | Pin Name | Terminal Function |
|---|---|---|
| 1 | $V_{ST}$ | Input terminal for standard supply voltage. |
| 2 | $V_{R1}$ | Input terminal for standard voltage of comparator. |
| 3 | $V_{IN(RI)1}$ | Input terminal for rec signal. |
| 4 | $PH_1$ | Terminal to connect a capacitor for peak hold. |
| 5 | $C_{IN1}$ | Input terminal for comparator. |
| 6 | $C_{OUT1}$ | Output terminal of comparator. |
| 7 | $V_{OUT1A}$ | Output terminal of $VCA_{1A}$. |
| 8 | $V_{OUT1B}$ | Output terminal of $VCA_{1B}$. |
| 9 | GND | Ground terminal. |
| 10 | $V_{IN\ (O)}$ | Input terminal for bias signal. |
| 11 | $V_{OUT2B}$ | Output terminal of $VCA_{2B}$. |
| 12 | $V_{OUT2A}$ | Output terminal of $VCA_{2A}$. |
| 13 | $C_{OUT2}$ | Output terminal of comparator. |
| 14 | $C_{IN2}$ | Input terminal for comparator. |
| 15 | $PH_2$ | Terminal to connect a capacitor for peak hold. |
| 16 | $V_{IN(RI)2}$ | Input terminal for rec signal. |
| 17 | $V_{R2}$ | Input terminal for standard voltage of comparator. |
| 18 | $V_{CC}$ | Power supply voltage terminal. |

# 8. OTHER PARTS

<Front View>




<Top View>



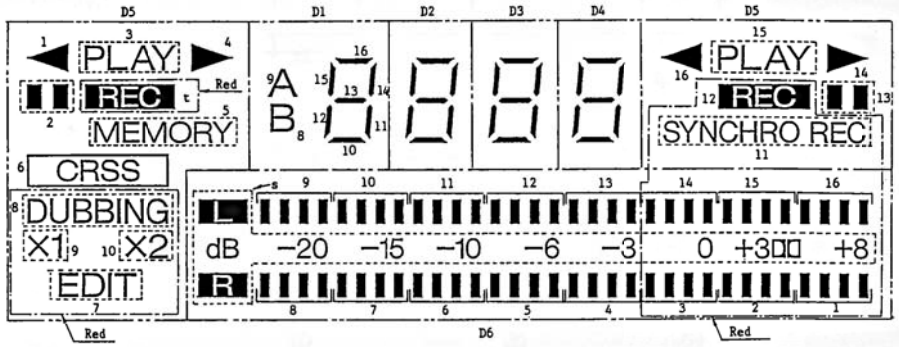

**Parts List <Front View>**

| Parts No. | Stock No. | Description |
|---|---|---|
| 1 | 49495100 | Headphone Jack |
| 2 | 05004300 | Slide Knob, TIMER·DOLBY NR REVERSE MODE |
| 3 | 27626500 | Power SW. Knob |
| 4 | 27833310 | Logo Badge |
| 5 | 27835400 | Bonnet |
| 6 | 05005200 | Lid Cover A |
| 7 | 05004900 | Eject Knob A |
| 8 | 05005000 | Eject Knob B |
| 9 | 05005300 | Lid Cover B |
| 10 | 05006300 | Front Panel A |
| 11 | 05004000 | Front Panel B (Plastic) |
| 12 | 27857010 | Ring for Leg |
| 13 | 27842000 | Leg Sheet |
| 14 | 05005100 | Azimuth Cover |
| 15 | 05004100 | Control Knob |
| 16 | 05004500 | Knob, REC LEVEL |
| 17 | 05004400 | Knob, BALANCE·BIAS |
| 18 | 05004200 | Knob, MPX FILTER |

**Parts List (Top View>**

| Parts No. | Stock No. | Description |
|---|---|---|
| 1 | 27820720 | Channel, Left |
| 2 | 47157300 | AC Cord Cover |
| ⚠ 3 | 38004700 | Power Supply Cord (XX, UL, CSA) |
| ⚠ | 48837700 | Power Supply Cord (SS) |
| ⚠ | 49252900 | Power Supply Cord (UK) |
| ⚠ | 49299300 | Power Supply Cord (EU, SEV) |
| ⚠ 4 | 15038301 | Power Transformer (XX, SS) |
| ⚠ | 15038302 | Power Transformer (UL, CSA) |
| ⚠ | 15038305 | Power Transformer (EU, SEV) |
| ⚠ | 15038306 | Power Transformer (UK) |
| 5 | 48985400 | Jack, System Control |
| 6 | 49436400 | Jack, Synchro REC |
| 7 | 48528500 | 4P Terminal, LINE IN/OUT |
| 8 | 27820830 | Channel, Right |
| ⚠ 9 | 46364300 | Push SW., POWER |

# 9. DISPLAY PATTERN AND PIN ASSIGNMENT OF CP5443GR FL DISPLAY




**PIN ASSIGNMENT**

| Pin No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assignment | F | Pt | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | P11 | P12 | P13 | P14 | P15 | P16 | Ps |

| Pin No. | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|---|---|---|---|---|---|---|---|---|
| Assignment | NC | D1 | D2 | D3 | D4 | D5 | D6 | F |

F: Filament NC: No Connection

# 10. MAIN PARTS REPLACEMENT

**(See Top View on page 14 and Exploded View of Mechanism on page 10)**

## A. Lid Cover Ⓐ and Ⓑ (See Fig. 10-1)

1) Press the eject knob and open the lid cover.
2) Lift up lock Ⓐ and lock Ⓑ (arrow mark Ⓓ) to unlock the cassette pocket ⑯.
3) Position the lid cover horizontally in the direction of the arrow mark ②.
4) Push in the direction of the arrow mark ③ and lift up to remove the cover.

## B. Azimuth Cover

Insert a screwdriver in the groove of the azimuth cover ⑭ center and remove the hook. (See Fig. 10-2.)

## C. Mechanism Assembly

1) Remove the bonnet.
2) Remove the bottom plate.
3) Press the eject knob to open the cassette pocket and remove lid cover Ⓐ and Ⓑ (See Fig. 10-1).
4) Disconnect JP3, JP14, JP15 and JP16.
5) Disconnect JP7, JP11 and JP12 (A-mechanism only).
6) Remove the six stoppers ⊗ . Slide the front panel assembly forward.
7) Remove the 4 screws Ⓑ attaching the mechanism assembly.
8) Remove the mechanism assembly from the backside, passing through the bottom of the front panel assembly with the cassette pocket ⑯ kept open (See Fig. 10-3).

## D. Front panel assembly Ⓐ or Ⓑ

1) Remove the mechanism assembly.
2) Pull out the REC LEVEL, BIAS AND BALANCE knobs.
3) Remove two screws to remove the power switch and power knob.
4) Remove one screw to remove TIME board F-6418.

Fig. 10-1

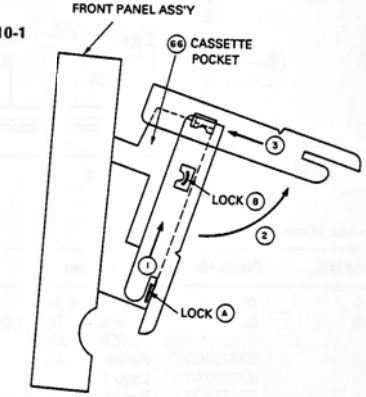
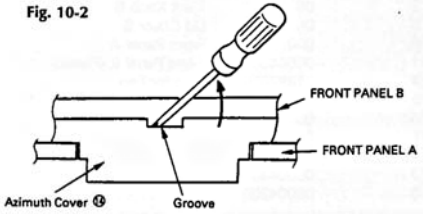



Fig. 10-2






5) Disconnect JP1, JP17 and JP18.
6) Disconnect parallel cord JP6.
7) Unhook two stoppers to remove phones board F-6423.
8) To separate front panel assembly Ⓐ and Ⓑ, unhook all stoppers while pushing front panel assembly Ⓑ in the direction of arrow B. (See Fig. 10-4.)
9) Remove two screws, two stoppers and three nuts to remove F-6420.

## E. Head Base Ass'y ③

**(See Exploded View of Mechanism on Page 10)**

1) Remove the mechanism ass'y from the set.
2) Remove the cassette pocket ⑯.
3) Remove the pinch roller F ⑪ and R ⑫ ass'y.
4) Remove the special screw ⑰ fixing the eject stopper ⑦.
5) Remove the head base spring (3-9).
6) Disconnect the soldered QS lead wire (3-21).
7) Unhook the lead holder ⑱ from the mechanism chassis.
8) Remove the head base ass'y ③ from the mechanism chassis.

## F. Cam Gear ⑭, Belt ⑱, Flywheel Ass'y ㉙, ㉚

**(See Exploded View of Mechanism on Page 10)**

1) Remove the three screws ㉘ fixing the capstan motor ass'y ④.
2) Disconnect two soldered lead wire connected to the P.C.B. (control) ⑤ and the capstan motor ass'y ④.
3) Remove the belt ⑱.
4) Remove the flywheel F ass'y ㉙ and R ass'y ㉚.
5) Remove the play arm ⑫.
6) Remove the P.C.B (Direction SW.) (5-17).
7) Move the slide plate ⑨ to the right until it stops and remove it together with the cam gear ⑭.

Fig. 10-3

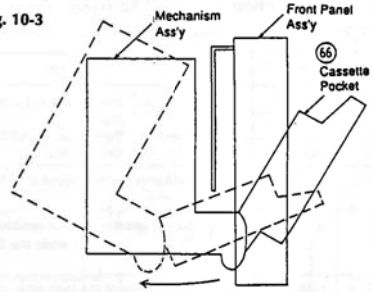
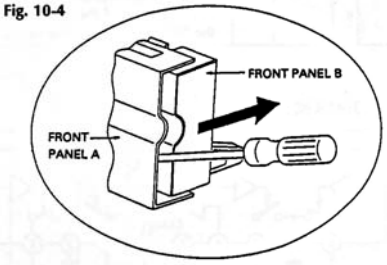
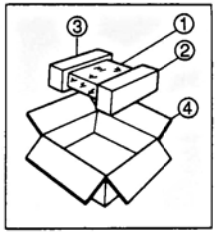



Fig. 10-4




# 11. PACKING LIST

| Parts No. | Stock No. | Description |
|---|---|---|
| 1 | 47859100 | Vinyl Bag |
| 2 | 27831600 | Styrofoam Packing, R-CH |
| 3 | 27831500 | Styrofoam Packing, L-CH |
| 4 | 05009400 | Carton Case |




# 12. ACCESSORY LIST

| Parts No. | Stock No. | Description |
|---|---|---|
| | 48802100 | PJP Cord, 1m |
| | 46267300 | Mini Pin Plug Cord |
| | 19066800 | Operating Instructions |

SANSUI

SANSUI ELECTRIC CO., LTD.: New River Bldg. 10-14, Shinkawa 1-chome, Chuo-ku, Tokyo 104, Japan
PHONE: (03) 5566-1024 / FAX: 03-5566-1027 (International Division)
SANSUI USA INC.: 1250 Valley Brook Ave. Lyndhurst, N.J. 07071 U.S.A.
17150 South Margay Ave. Carson, California 90746 U.S.A.
SANSUI DEUTSCHLAND G.M.B.H.: Paul-Ehrlich-Strasse 8, 6074 Rödermark 2, West Germany
山水電気株式会社 東京都中央区新川1-10-14 (〒104)

(SM2-192) Printed in Japan (1990.09.C) <Stock No. 36553500>