

TASCAM

TEAC Professional Division

SERVICE MANUAL

246

PORTASTUDIO

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PRECAUTIONS

- Value of "dB" in the Data refers to 0 dB (1V), except where specified.
- The AC voltmeter used in the procedures must have an input impedance of 1 M-ohms or more.
- Resistor values are in ohms (k = 1,000 ohms, M = 1,000,000 ohms).
- All capacitor values are in microfarads (p = picofarads).
- ⚠ parts marked with this sign are safety critical components . They must always be replaced with identical components — refer to the TEAC parts list and ensure exact replacement.
- Improvements may result in Specifications and Service Data changes.
- dbx noise reduction system made under license from dbx, incorporated. The name "dbx" and the dbx symbol are trademarks of dbx, Incorporated.

1. SPECIFICATIONS AND SERVICE DATA

MECHANICAL CHARACTERISTICS

| | |
|---------------------------------|---|
| Tape | Compact cassette, 70 μ s, Hi-bias (Type II) tape |
| Track Format | 4-track, 4-channel |
| Head Configuration | 1 Erase, 1 Record/Reproduce |
| Motors | 1 FG Servo-controlled DC Capstan; 1 DC Reel; 1 DC ancillary |
| Tape Speeds³⁾ | 3-3/4 ips (9.5 cm/s) and 1-7/8 ips (4.8 cm/s) |
| Speed Accuracy | \pm 1.0 % deviation |
| Pitch Control | \pm 12 % |
| Fast Wind Time | Approx. 85 seconds for C-60 |
| Pause Start Time | Less than 0.5 sec. to reach standard Wow and Flutter |
| Dimensions (W x H x D) | 500 x 401 x 123 mm (19-11/16" x 15-13/16" x 4-13/16") |
| Weight (net) | 10.3 kg (22.7 lbs) |

ELECTRICAL CHARACTERISTICS

MIXER SECTION

| | |
|----------------------------|---|
| MIC/LINE Input | |
| Input Impedance | 100k ohms, unbalanced |
| Source Impedance | Less than 10k ohms |
| Nominal Input Level | -60 dBV (1 mV), MIC (Trim max.) -10 dBV (0.3 V), LINE (Trim min.) +15 dBV (5.6 V) |
| Maximum Input Level | |
| LINE B Input | |
| Input Impedance | 28k ohms |
| Nominal Input Level | -10 dBV (0.3 V) |
| Maximum Input Level | +15 dBV (5.6 V) |
| PGM Buss Input | |
| Input Impedance | 22k ohms |
| Nominal Input Level | -10 dBV (0.3 V) |
| Maximum Input Level | +15 dBV (5.6 V) |

INSERTION

| | |
|-------------------------------|-----------------|
| SEND (Tip) | |
| Output Impedance | 100 ohms |
| Nominal Load Impedance | 10k ohms |
| Minimum Load Impedance | 1.7k ohms |
| Nominal Output Level | -10 dBV (0.3 V) |
| Maximum Output Level | +15 dBV (5.6 V) |
| RECEIVE (Ring) | |
| Input Impedance | 68k ohms |
| Nominal Input Level | -10 dBV (0.3 V) |
| Maximum Input Level | +15 dBV (5.6 V) |

PGM/EFFECT/MONITOR Output

| | |
|-------------------------------|-----------------|
| Output Impedance | 100 ohms |
| Nominal Load Impedance | 10k ohms |
| Minimum Load Impedance | 1.7 kohms |
| Nominal Output Level | -10 dBV (0.3 V) |
| Maximum Output Level | +15 dBV (5.6 V) |

HEADPHONES Output

| | |
|-------------------------------|----------------------|
| Nominal Load Impedance | 8 ohms, stereophones |
| Maximum Output Level | 100 mW/ch. (8 ohms) |

| | |
|--------------------------|---|
| Equalizer | |
| Type | 2-band, peak/dip, sweepable |
| Frequencies | Low/Mid; 62 Hz to 1.5 kHz Mid/High; 1 kHz to 8 kHz |
| Boost/Cut Range | ±12 dB |
| Input Overload Indicator | Activates at 24 dB above nominal |
| PGM Buss Peak Indicator | Activates at 8 dB above nominal |

RECORDER SECTION

| | |
|--------------------------|---|
| Tape Out | |
| Output Impedance | 100 ohms |
| Nominal Load Impedance | 10k ohms |
| Minimum Load Impedance | 1.7k ohms |
| Nominal Output Level | -10 dBV (0.3 V) |
| Maximum Output Level | +15 dBV (5.6 V) |
| Bias Frequency | 85 kHz |
| Equalization | High Speed; 3,180 μ s + 35 μ s Low Speed; 3,180 μ s + 70 μ s |
| Record Level Calibration | 160 nWb/m (0 VU reference) |
| Noise Reduction | 4 Channel, dbx II, dual process |
| Power Requirements | |
| USA/CANADA | 120 V AC, 60 Hz |
| EUROPE | 220 V AC, 50 Hz |
| UK/AUSTRALIA | 240 V AC, 50 Hz |
| GENERAL EXPORT | 100/120/220/240 V AC, 50/60 Hz |
| Power Consumption | 40 W |

TYPICAL PERFORMANCE CHARACTERISTICS**MIXER SECTION**

| | |
|---|----------------------------------|
| Frequency Response | 20 Hz – 20 kHz \pm 1 dB |
| Signal-to-Noise Ratio | IHF A WTD/UNWTD (20 – 20 kHz) |
| 1 Mic to PGM Out | 68 dB/65 dB |
| 1 Line to PGM Out | 85 dB/80 dB |
| Total Harmonic Distortion ²⁾ | 0.05 %, nominal level |
| Crosstalk ²⁾ | 65 dB |

RECORDER SECTION

| | |
|---|--|
| Wow and Flutter ³⁾ | HIGH speed 0.04 % (NAB weighted) \pm 0.06 % peak (DIN/IEC/ ANSI weighted) |
| | LOW speed 0.05 % (NAB weighted) \pm 0.1 % peak (DIN/IEC/ ANSI weighted) |
| Frequency Response ⁴⁾ (Record/Reproduce) | |
| HIGH speed | 20 Hz – 18 kHz 40 Hz – 14 kHz, \pm 3 dB |
| LOW speed | 40 Hz – 14 kHz 40 Hz – 12.5 kHz, \pm 3 dB |
| Signal-to-Noise Ratio ⁴⁾ (Reference to 3 % THD) | IHF A WTD/UNWTD (20 – 20 kHz) |
| HIGH speed | 95 dB/90 dB with dbx * 58 dB/55 dB without dbx |
| LOW speed | 93 dB/88 dB with dbx 57 dB/54 dB without dbx |
| Total Harmonic Distortion ^{1, 4)} | |
| HIGH speed | 1.0 %, 0 VU, with/without dbx |
| LOW speed | 1.0 %, 0 VU, with/without dbx |

| | |
|---|--|
| Adjacent Channel Separation ²⁾ | 70 dB with dbx (0 VU) 55 dB without dbx |
| Erasure (referenced to 3 % THD level) | 70 dB at 1 kHz |

SERVICE DATA

| | |
|---|--|
| Tape Speed: | |
| Deviation: | 3,000 Hz \pm 30 Hz |
| Width of deviation: | Within 30 Hz |
| Pitch Control: | |
| Minimum: | Less than 2,610 Hz |
| Maximum: | More than 3,390 Hz |
| Take-up Torque: | |
| At play and record: | 40 to 50 g-cm (0.49 to 0.7 oz-inch) |
| At FF: | Higher than 55 g-cm (0.76 oz-inch) |
| At REW: | 80 to 150 g-ms (1.11 to 2.08 oz) |
| Pinch Roller Pressure: | 350 to 500 g-ms (12.34 to 17.64 oz) |
| Wow & Flutter: | Refer to Section 4-4-9 |
| Frequency Response: | |
| Mic/Line INPUT \rightarrow PGM OUT, EFFECT OUT, MONITOR OUT | 20 Hz to 20,000 Hz \pm 1 dB |
| Parametric EQ: | Refer to Section 4-5-7 |
| Overall: | Refer to Section 4-6-7 |
| Overall SN Ratio: | Refer to Section 4-6-9 |
| Overall Distortion: | Refer to Section 4-6-8 |
| Erasing Ratio: | Refer to Section 4-6-10 |
| Headphones (L, R): | Maximum 900mV at 8 ohms |

2. CIRCUIT DESCRIPTION

2-1 OUTLINE

Electric circuit section consists of an amplifier circuit section, control circuit section which processes operation modes of the tape deck and associated control signals, driver section which drives motor, and power supply circuits which supply power to each circuit.

The amplifier circuit section contains mixer amplifiers, recording/reproducing amplifiers, dbx encoders, dbx decoders, recording bias circuit, meter amplifiers and monitor amplifiers.

The control circuit consists of a main unit composed of four-bit single tip microcomputer, input-port extension interface IC and output-port extension interface IC, and logic circuits.

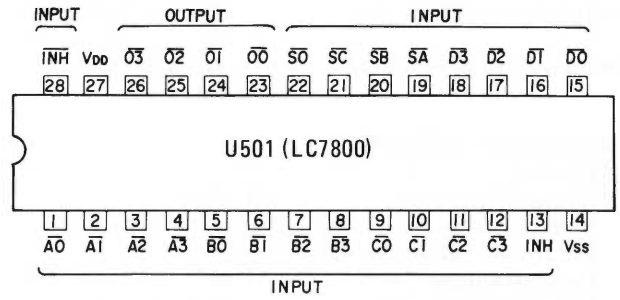
2-2 CONTROL CIRCUIT

The control circuit, as shown in Fig. 2-2, consists of the main unit composed of four-bit single tip microcomputer (U502), input-port extension interface IC (U501), and output-port extension interface IC (U503), and the logic circuits.

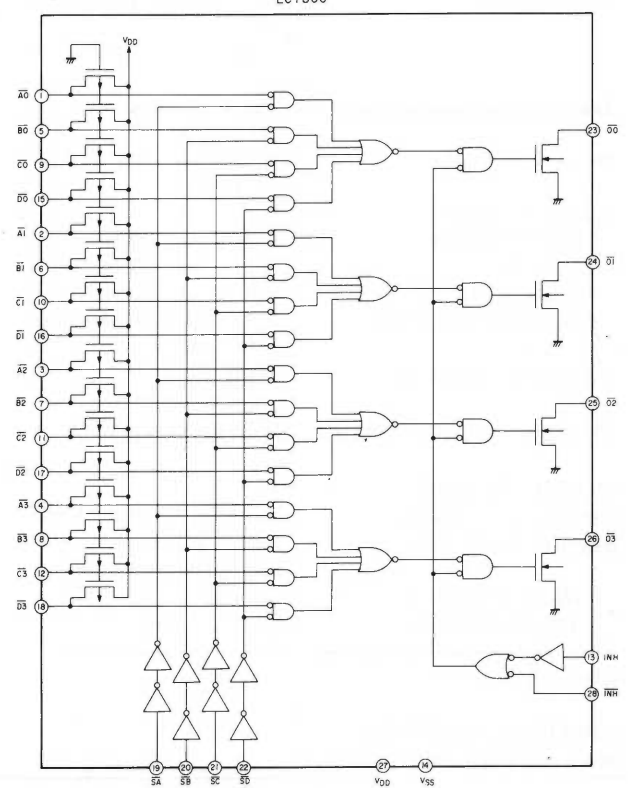
1. Reading of operation input

- 1) The input-port extension IC U501 is composed as shown in Fig. 2-1 and operation switches of the deck are connected to its input terminals as shown in Fig. 2-2.
- 2) Output terminals (C0 - C3) of the microcomputer U502 generates four-phase scanning pulses as shown in Fig. 2-2, and they are connected to the terminals SA - SD of U501.
- 3) U501 makes logical operations on the input (L level) from the operation switch(es) of the deck and the scanning pulses, sending the result from the 00 - 03 terminals to the A0 - A3 terminals of the microcomputer. The microcomputer analyzes the signals and knows which one of the operation switches was pressed, thereby generating an output required for the specified operation according to the inner program.
- 4) However, as for zero stop, zero play, memory stop and memory REW, U501 is not used but a separate circuit is used as shown in Fig. 2-2.

Pin Layout



Equivalent Circuit



Truth Table

| INPUT | | | | | | | | | | | | | OUTPUT | | | | | | | | | | | | |
|------------|----|----|----|----|----|----|----|----|----|----|----|--------------|--------|---------------|----|----|----|----|----|-----|-----|----|----|----|----|
| DATA INPUT | | | | | | | | | | | | SELECT INPUT | | INHIBIT INPUT | | | | | | | | | | | |
| A | | | | B | | | | C | | | | D | | | | SA | SB | SC | SD | INH | INH | O0 | O1 | O2 | O3 |
| A0 | A1 | A2 | A3 | B0 | B1 | B2 | B3 | C0 | C1 | C2 | C3 | D0 | D1 | D2 | D3 | SA | SB | SC | SD | INH | INH | O0 | O1 | O2 | O3 |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | |
| 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | |
| 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | |
| 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | |
| 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | |
| * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 1 | 0 | 1 | 1 | 1 | 1 | |
| * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 1 | 0 | 1 | 1 | 1 | 1 | |
| * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 1 | 0 | 1 | 1 | 1 | 1 | |
| * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 0 | 1 | 1 | 1 | 1 | 1 | |

Note: 1: "H" level, 0: "L" level, *: don't care

Fig. 2-1
U501 (LC7800)

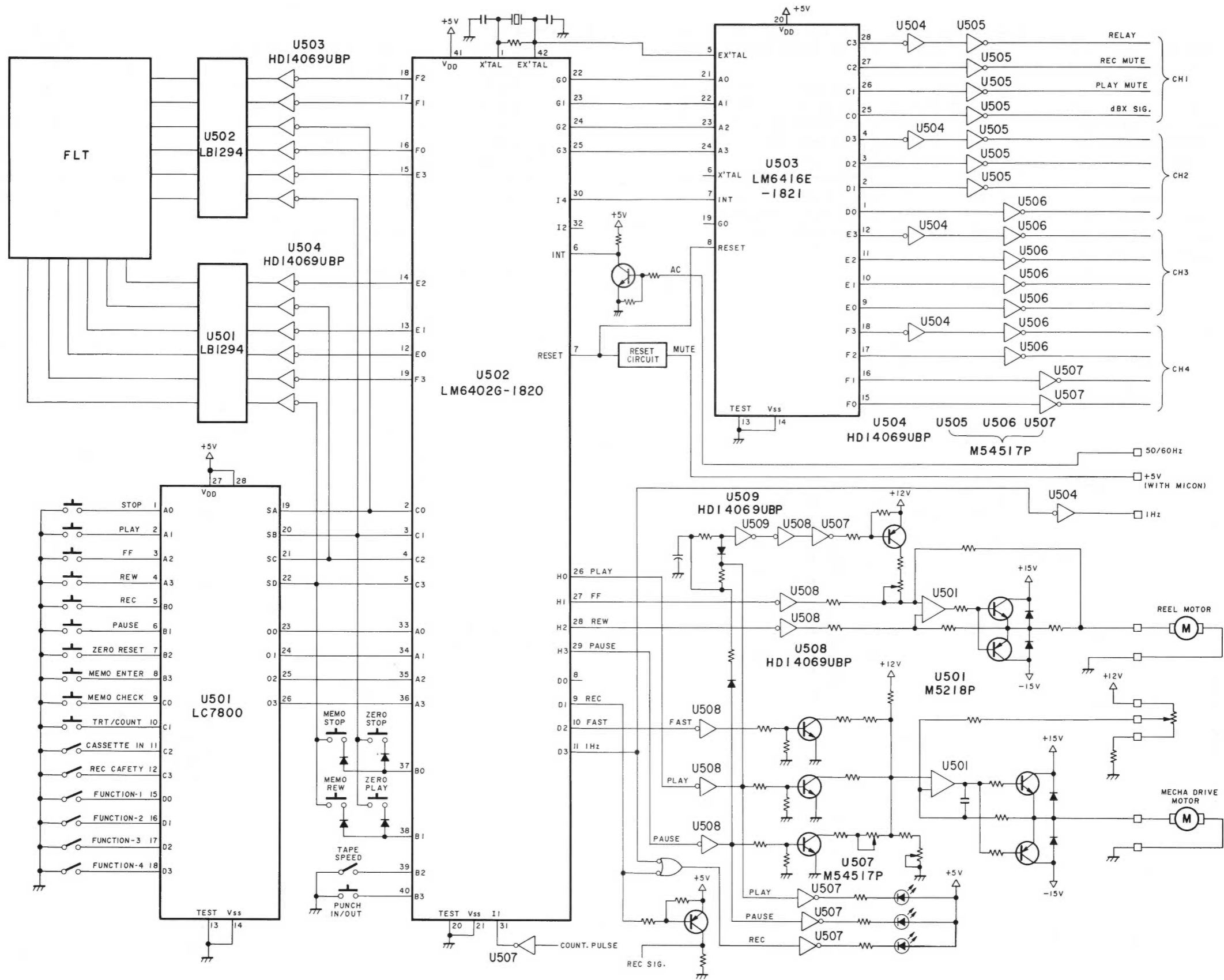


Fig. 2-2

A. PLAY Mode

- 1) When the PLAY switch is pressed, PLAY terminal in the Fig. 2-2 turns to L and A1 terminal of U501 also turns to L (refer to Fig. 2-3).
- 2) As a result, pin 26 H0(PLAY) of U502 turns to L, and output pin 2 of inverter U508 turns to H. Transistor Q506 turns "ON", determining voltage on the mode terminal. This mode control voltage is supplied to the driver section via P504.
- 3) The mode control voltage supplied to the driver section is input to pin 3 of U501 in the drive PCB and compared with voltage applied to pin 2, and the resultant difference output voltage drives Q501 (Q502) which in turn drives the mecha-driver motor (i.e. mode setting cam), thus setting the PLAY mode.

- 4) As pin 2 of U508 turns to H level, pin 16 of U507 in the CONT (A) PCB Assembly turns to L level, lighting PLAY LED D505 as a result.
- 5) As was described previously, output pin 2 of U508 turns to H level in the PLAY mode, output pin 8 of U509 turns to L, output pin 4 of U508 turns to H and output pin 11 of U507 turns to L, as the result, Q504 turns "ON". Consequently, FWD terminal of P504 turns to H level.
- 6) The H level voltage from FWD terminal of P504 is applied to the input pin 5 of the operational amplifier U501 (5, 6, 7) in the motor drive PCB assembly circuit on the drive PCB, and rotates the reel motor in the forward direction.

B. REC Mode

- 1) The B0 terminal of U501 turns to L level when REC and PLAY switches are pressed to start recording function. This turns D1 (REC) terminal of U502 to L level and conducts the upper side of diode D 508 connected to the D1 terminal, turning the transistor Q501 "ON". Consequently LED terminal of P501 turns to H level. This signal is applied to REC function switch as a REC mode signal used for lighting LEDs, etc.
- 2) The L level signal from the D1 terminal is also applied to Q503 base, conducting Q503. This turns Q503 collector to H level, and output pin 10 of the next inverter U507 to H level. This signal is then inverted by the inverter U507 on the CONT (A) PCB Assembly to light REC.LED (D507).

- 3) The H level signal from Q503 collector is also applied to the REC terminal of P501, and is used as a control signal for the amplifier circuit.
- 4) The H level signal from output pin 2 of U508 on control PCB assembly (B) is applied to PLAY.LED via the inverter U507 (1, 16) as was described in the PLAY mode, and lights up the LED. Also the signal turns on Q504 via U509 (9, 8), U508 (3, 4) and U507 (6, 11), and turns FWD terminal of P504 to H level to generate control voltage for the REEL motor to rotate in the forward direction.

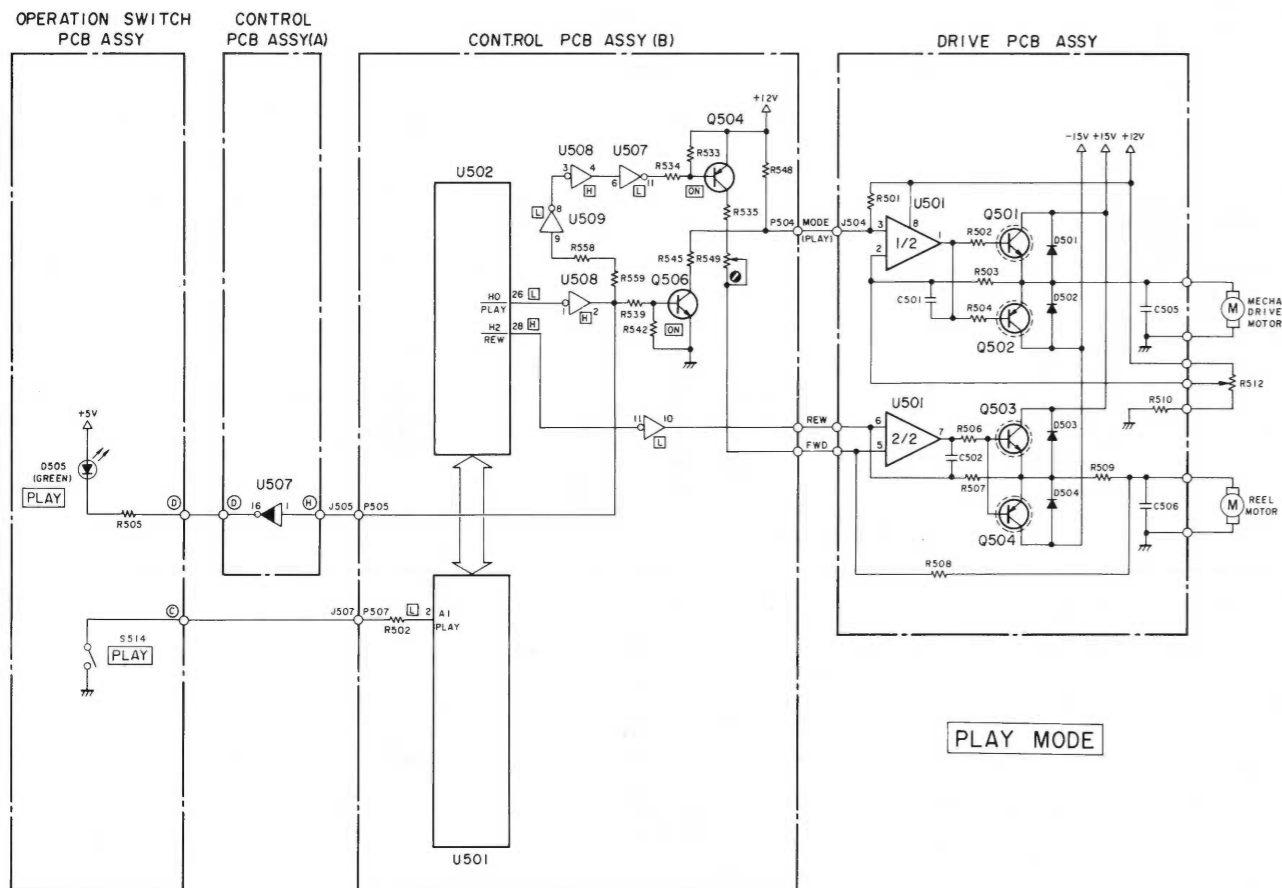


Fig. 2-3

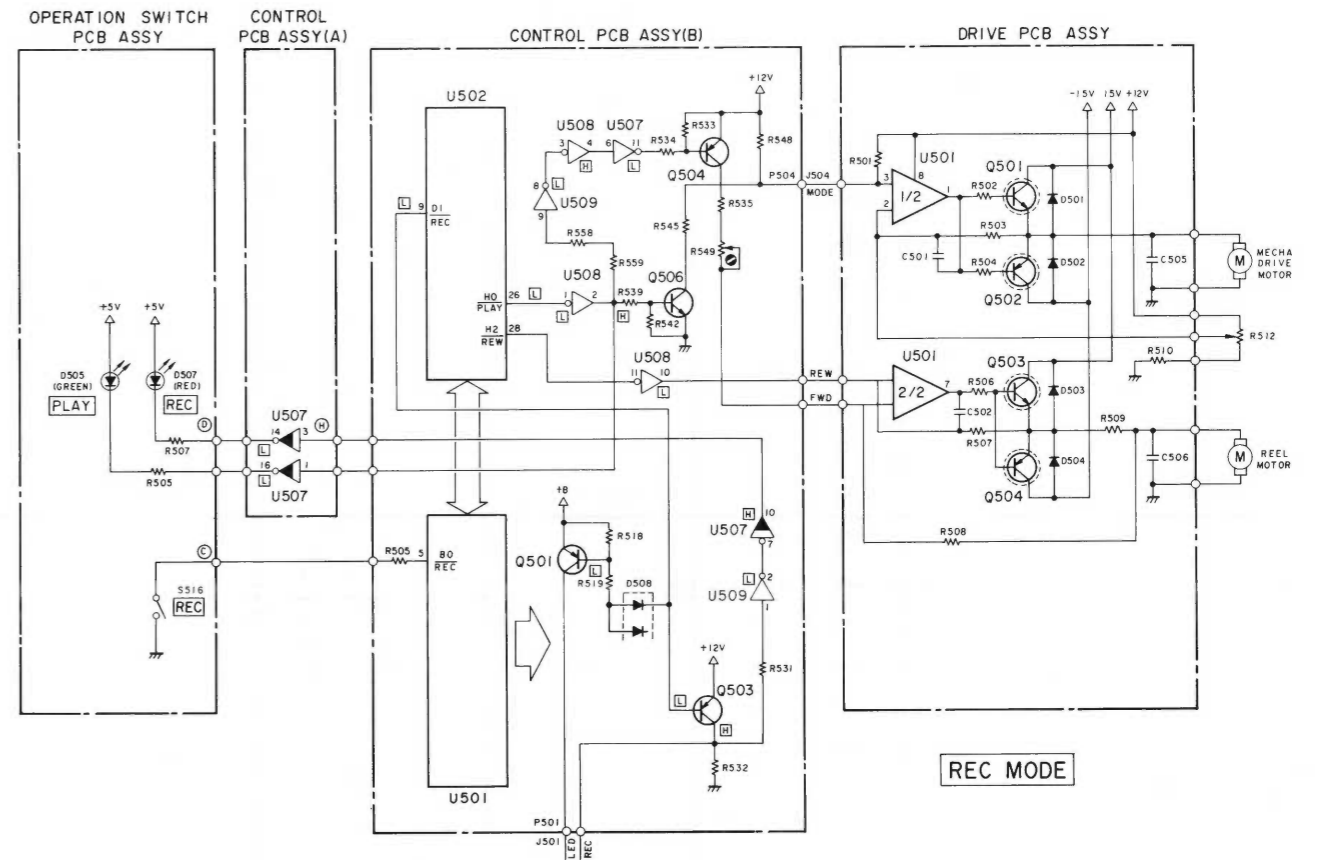


Fig. 2-4

C. PAUSE Mode

- 1) When the PAUSE switch is pressed, B1 of U501 turns to L level along with H3 (PAUSE) of U502. Consequently output pin 8 of U508 turns to H level, turning on the transistor Q507. As a result, voltage for PAUSE mode is generated at the mode terminal of P504. This voltage is then transmitted to pin 3 of the operational amplifier U501 in the driver section to set the mode control cam to the PAUSE mode.
- 2) The H level voltage from pin 8 of U508 is also applied to pin 2 of U507 on CONT (A) PCB Assembly, turning pin 15 to L level. Consequently PAUSE LED (D506) on the OPE SW PCB lights up.
- 3) 1 Hz pulse is always output from terminal D3 of U502 and input to pin 11 of U504. The inverted output is then input to the right diode of D509 from pin 10 and applied to the REC.LED via U507 (3 - 14), turning the LED on or off.

- 4) When PAUSE switch is pressed, L level signal from H0 terminal of U502 turns to H level. Q504 turns off as a result and FWD terminal of P504 turns to L level. REW terminal of P504, on the other hand, has been maintained at L level, therefore electrical potential difference between the two terminals becomes zero. In other words, the input electrical potential difference between two input terminals of the operational amplifier for the reel motor control circuit on the driver section reduces to zero, thus the REEL motor stops.

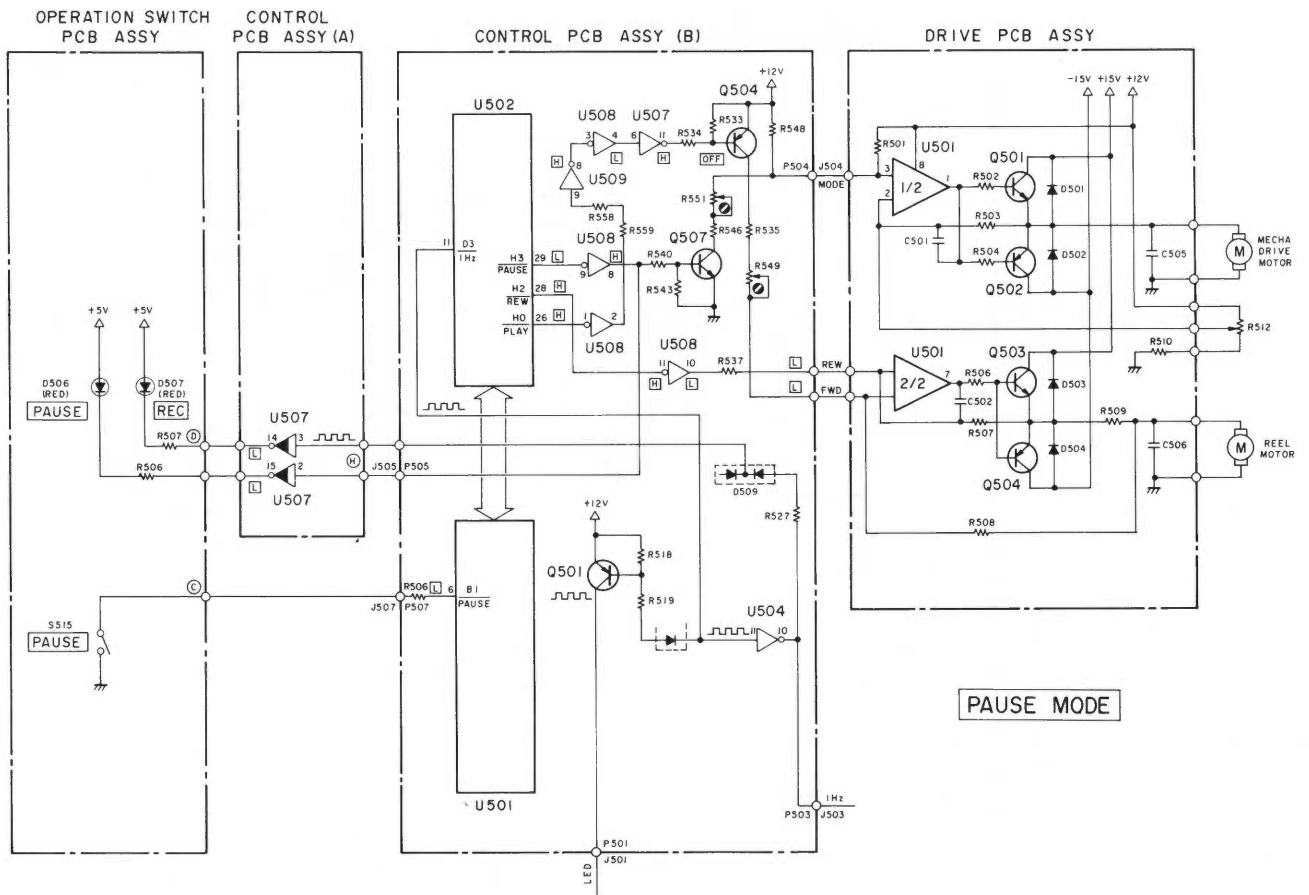


Fig. 2-5

D. REW Mode

- 1) When the REW switch is pressed, terminal A3 of U501 turns to L level, H2 (REW) terminal of U502 and D2 (FAST) terminal turn to L level. Consequently, output from output pin 10 of inverter U508 turns to H level. This output is input to the driver section via P504 as the REW output.
- 2) The REW voltage applied to the driver section passes through the motor drive circuit to rotate the REEL motor in the reverse direction.
- 3) Output pin 6 of U508 also turns to H level turning on transistor Q505, and generates voltage for the mode control. This voltage is then input to pin 3 of comparator U501 in the driver section, and rotates the motor which sets the operational mode cam.

E. FF Mode

- 1) When the FF switch is pressed, both A2 terminal of U501 and H1 (FF) terminal of U502 turn to L level. D2 (FAST) terminal also turns to L level as in the REW mode.
- 2) The L level voltage of H1 is inverted and output from pin 12 of U508, then enter the driver section as the FWD voltage for rotating the REEL motor in the normal direction.
- 3) The L level voltage at D2 operates in the same way as in the REW mode.

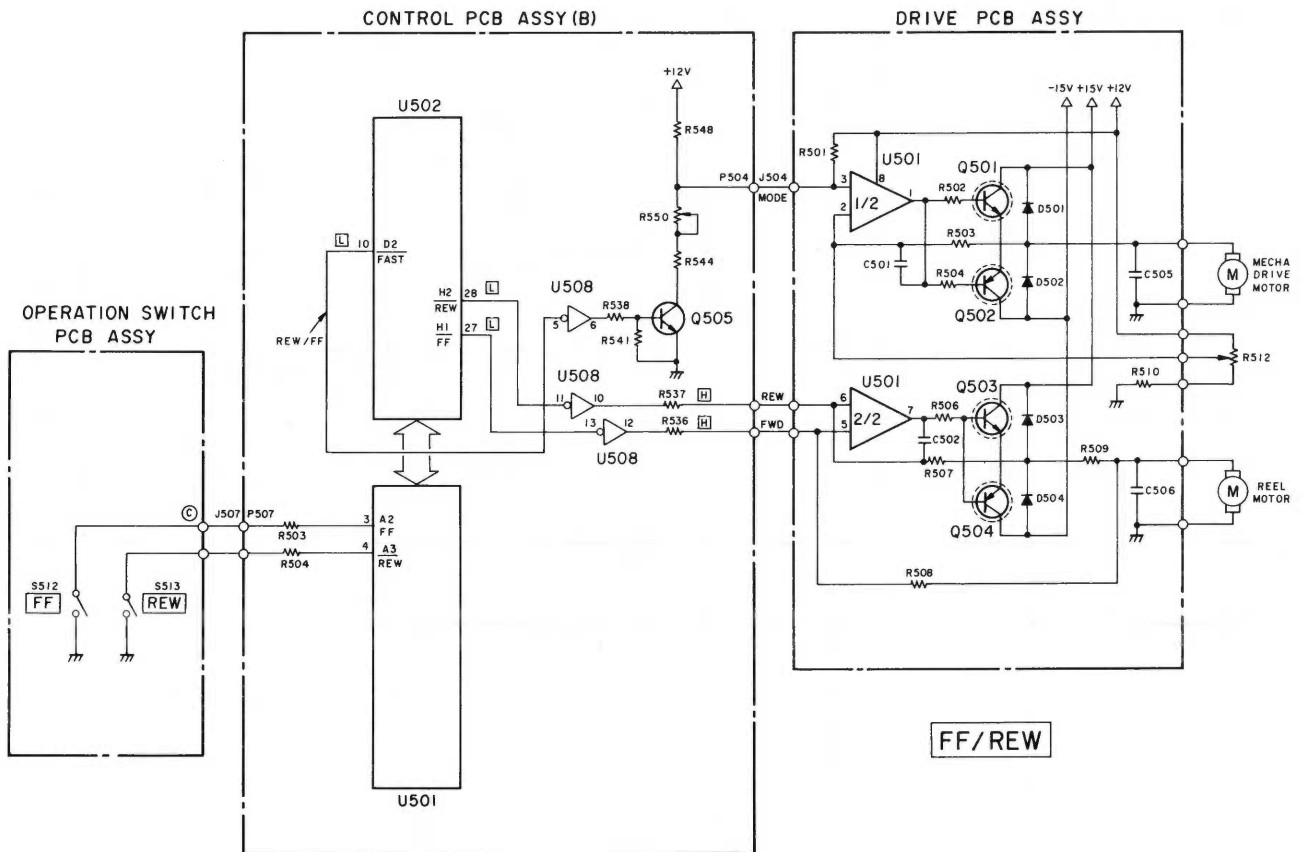


Fig. 2-6

F. POWER ON MUTE Circuit

This circuit resets the microcomputer at a transient time period during which power line voltage increases or decreases due to the on-off operation of the power switch, thus preventing occurrence of abnormal phenomena by suspending operation of the micro-computer.

1) When the power switch is turned on, voltage at the secondary side of the power transformer is applied to rectification diodes D008 and D009.

The rectified DC voltage then enters the power circuit board via the terminal (P503) MUT of CONT (B) PCB Assembly and is applied to pin 5 of inverter U507.

In this case, as the filtering capacitor in the power supply circuit is relatively small, the rectified voltage rises to its steady state in a relatively short period. When this voltage rises to H level, pin 12 of U507 develops L level.

This signal is then applied to the input pin 3 of the inverter U509 (3, 4), and its output pin 4 develops H level. However, as pin 4 is connected to the circuit with a relatively large time constant consisting of R524 and C515, the hot side of C515

maintains L level until C515 is charged fully with the power voltage. In other words input side of U509 turns to L level with output side turning to H level, and output pin 10 of U509 turns to L level.

With this L level voltage applied to the micro-computer U502 and RESET terminal of the output port extension IC U503, these ICs are reset until C515 is fully charged and the ICs completely stop functioning.

After the time equivalent to the time constant have lapsed, the hot side of C515 turns to H level and this makes pin 10 of U509 develop H level, turning RESET terminals of both ICs to H level. That is both ICs have been set to a standby mode and are ready to accept commands.

2) Because value of the filter capacitor C023 in the rectification circuit is relatively small, its terminal voltage immediately falls to L level when the power switch is turned off. Consequently input pin 5 of U507 on CONT (B) PCB Assembly turns to L level and output pin 4 of U509(3,4) also momentarily turns to L level. Since cathode side of diode D510 rapidly turns to L level, pins 10 and 13 of U509 turn to L level, resetting U502 and U503.

G. Amplifier Circuit Control Signal

U503 is an extension IC to generate control signals for four channels of the amplifier circuits.

Control signals internally processed by the micro-computer and extension IC are applied to the amplifier circuit via the output terminals P514, P513, P512 and P511 of CONT (B) PCB Assembly.

The output of each terminal is shown in the following chart.

| Terminal No. | Signal | STOP | PLAY | REC | Remarks |
|--------------|----------|------|------|-----|----------------------------|
| 1 | dbx Sig | L | L | H | H: Encode L: Decode |
| 2 | Play Mut | L | H | L | H: Mute off L: Mute on |
| 3 | Rec Mut | L | L | H | H: Mute off L: Mute on |
| 4 | Relay | H | H | L | H: Off L: On (Rec mode) |

These signals are applied to the amplifier circuit of the channels determined by FUNCTION switch.

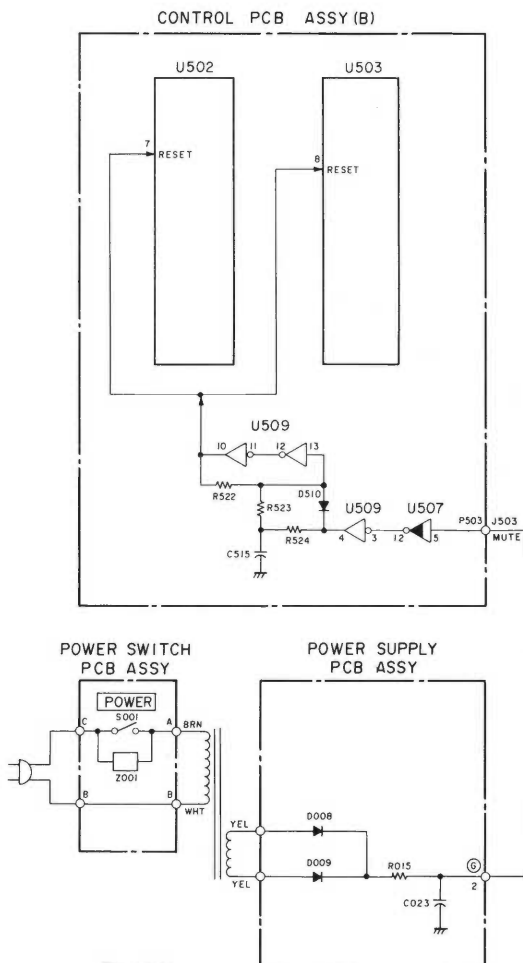


Fig. 2-7

2-3 RECORD, PLAYBACK CIRCUIT

This circuit is composed of record/playback amplifier circuits, dbx encoder/decoder, and a bias generator.

1. An audio signal generated by the playback head in the playback mode passes along the heavy line routines in the figure and is processed.
2. Q103 is a switch to match characteristics of the playback amplifier to a tape speed selected. In the Hi speed mode, H level signal is applied to the gate of Q103, and in the Low speed L level signal is applied.
3. Transistor Q123 functions as the muting switch which turns off in the playback mode and turns on in the record mode.
4. Transistors, Q118, Q117, Q106, Q108, Q107, Q109, Q110, Q111, Q112, Q511, Q510, Q115, and Q114 function as the switches which select decode or encode mode of the dbx NR system. They are set to ON and OFF in the playback mode as shown in the figure to create the decode mode.
5. U104 (8, 9) and U104 (4, 3) are analogue switches to set the encode and decode modes, U104 (4, 3) closes and U104 (8, 9) opens in the playback mode (decode). These analogue switches are controlled by Q118 and Q117 located just below the switches in the schematic.
6. The right analogue switches U104 (11, 10) and U104 (1, 2) are controlled by dbx IN/OUT signals. U104 (11, 10) opens and U104 (1, 2) closes when the NR system is actuated. When the dbx system is disabled, U104 (11, 10) closes and U104 (1, 2) opens. Consequently an input signal applied to pin 8 or 4 of U104 is directly output to pin 10 of U104, by-passing the dbx circuit.
7. In the record mode, the status of ON and OFF operation of the decode/encode switching transistors for the dbx NR system is reversed and set the dbx circuit to the encode mode. A recording signal is recorded via the route shown by the heavy line in the Fig. 2-9.
8. Q119 is a switching transistor for REC.MUTE, and is off when recording and on when reproducing.
9. Q121 and Q120 are switches to compensate for the level deviation produced by tape speed switching; Q120 turns on in the Hi speed mode and Q121 turns on in the LO speed mode, thus adjusting the recording level. Q122 also turns on in the LO speed compensating frequency characteristic.
10. Q610, Q611 and Q612 are turned on by the record mode signal, actuating the bias voltage amplifier to supply the bias voltage required in recording.

REC/PLAY PCB ASSY

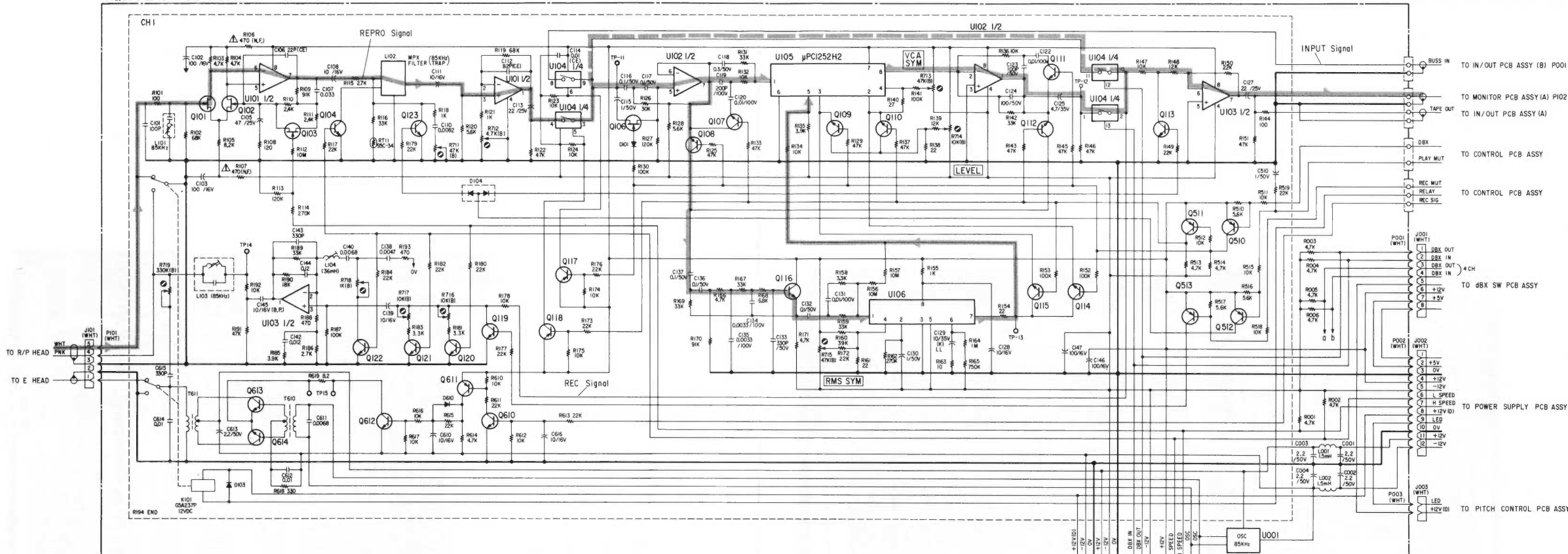


Fig. 2-8 a Signal in the Decode Mode

REC/PLAY PCB ASSY

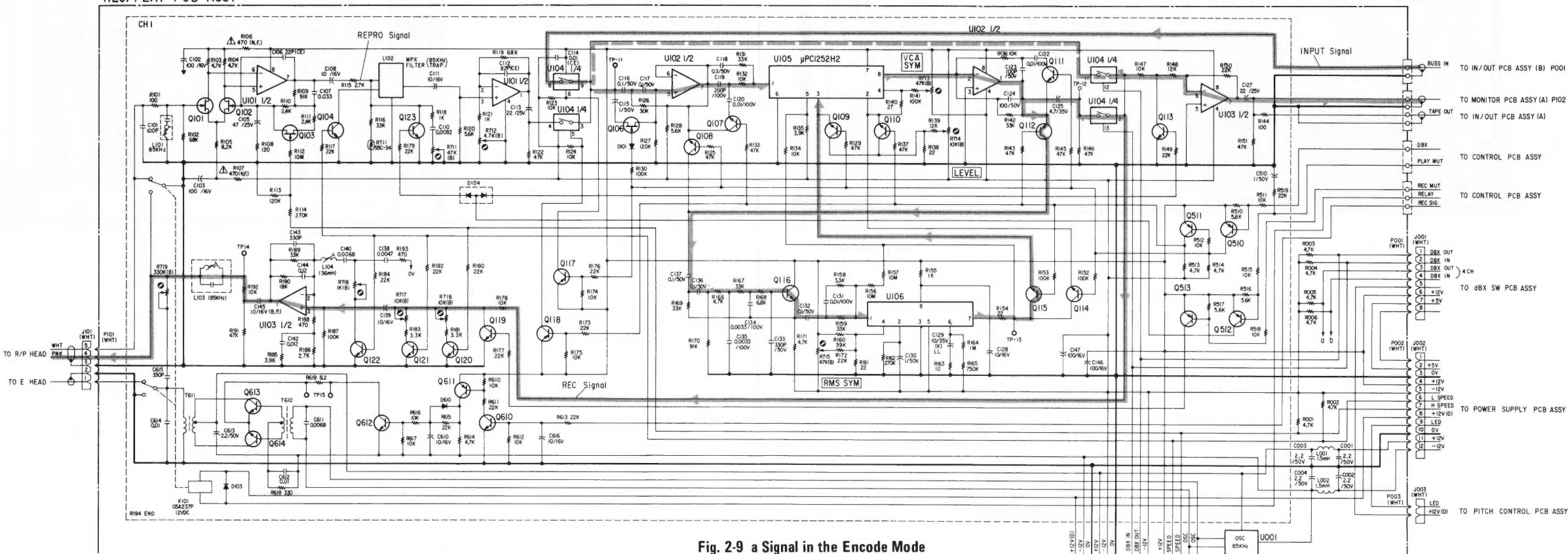
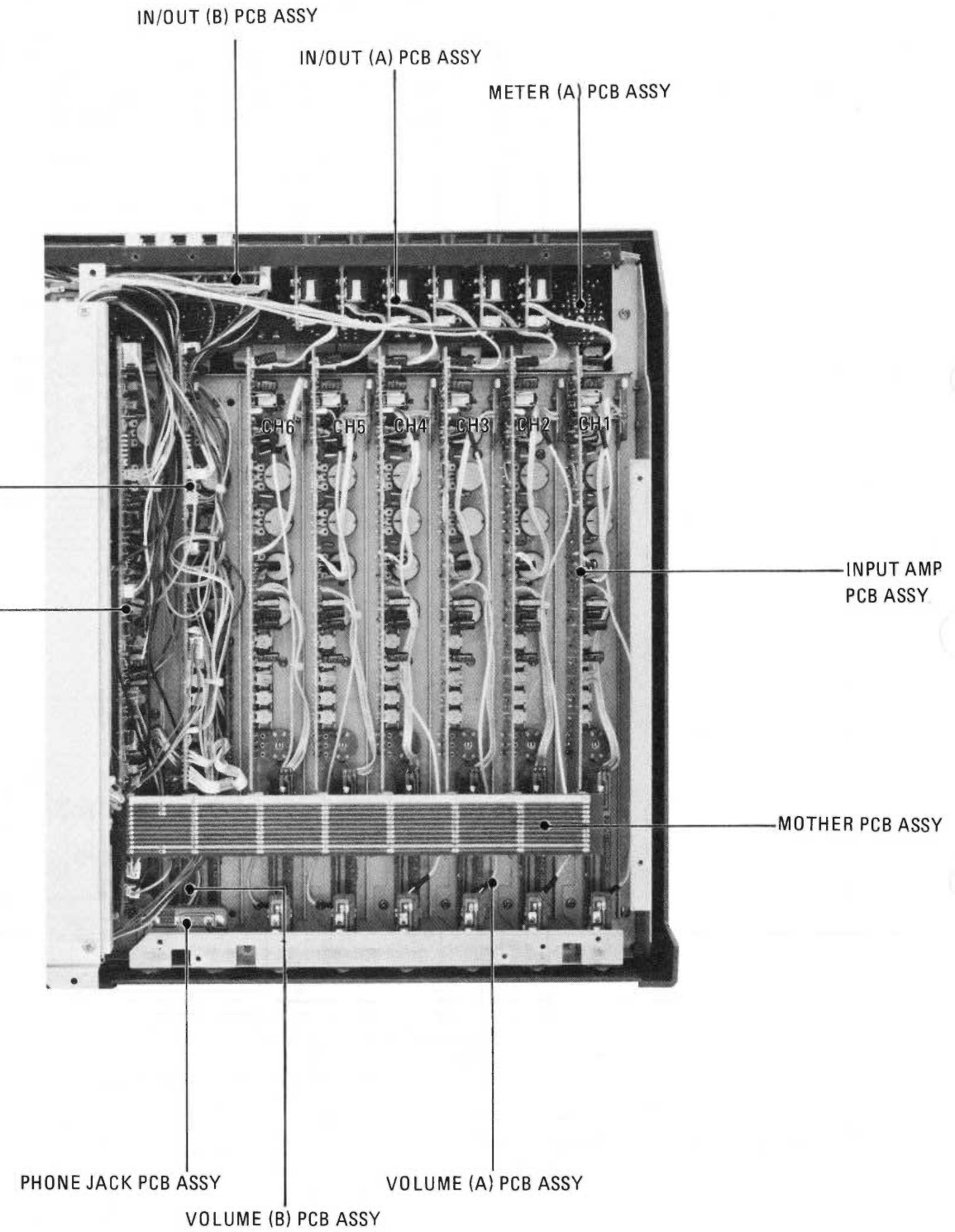
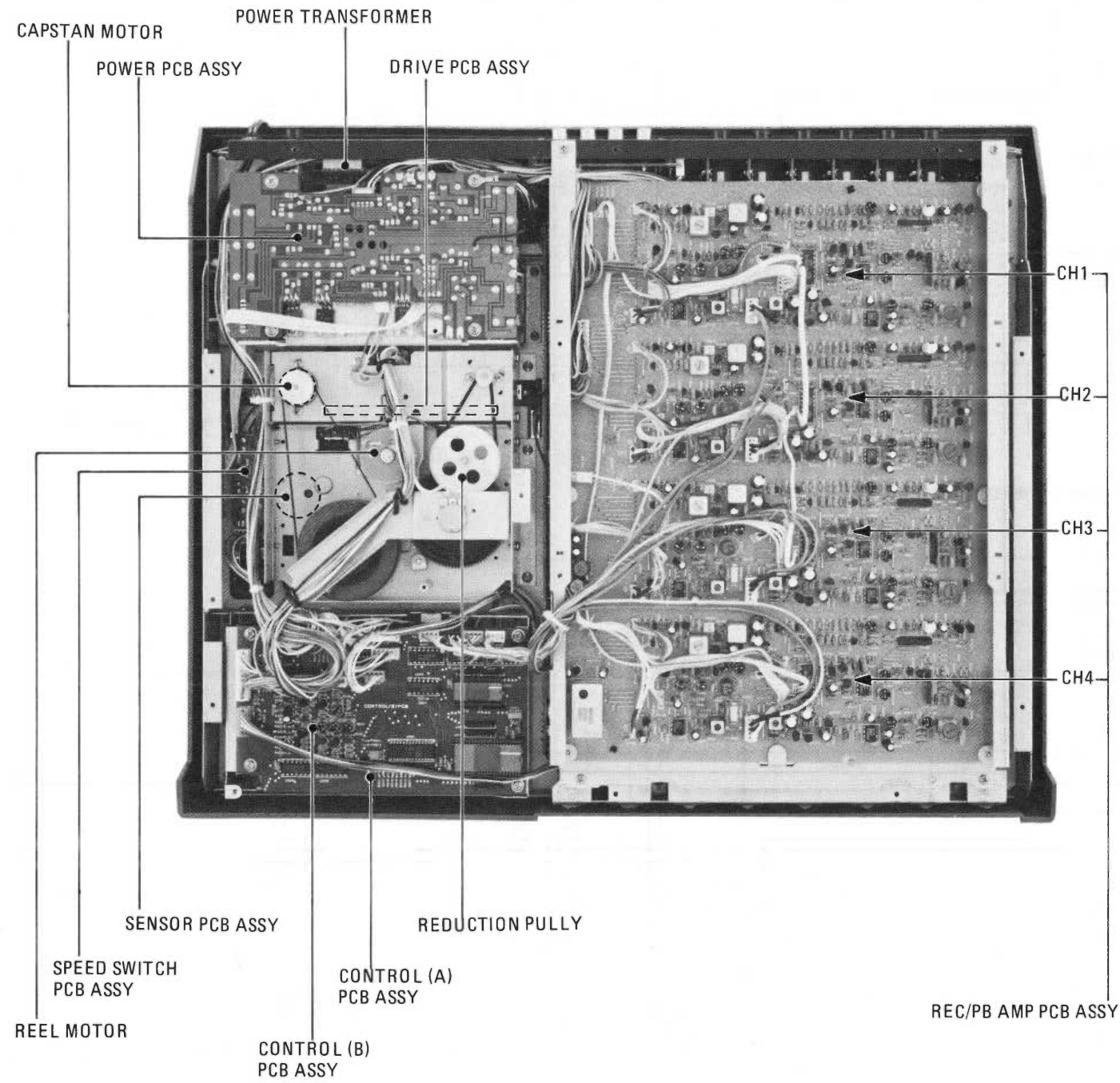


Fig. 2-9 a Signal in the Encode Mode

3. MAJOR PARTS LOCATION



4. MAINTENANCE

4-1 ADJUSTING TOOLS AND EQUIPMENT

The special tools and equipment required for adjusting the Model 246 are as follows:

- 1) Head Height Adjusting Jigs
 - Check base plate jig TEAC Parts No. 5030610000
 - Tape guide, pinch roller jig TEAC Parts No. 5030613000
- 2) Linear Tension Gauge 0 to 500 gms. (0 to 17.6 Oz)
- 3) Torque Meter
 - Cassette torque meter 0 to 100 g-cm (0 to 1.39 oz-in.)
SONY Corp. TW 211
 - Cassette torque meter 0 to 160 g-cm (0 to 2.22 oz-in.)
Silver Co. SRK-160
- 4) Crab Eye Screwdriver
- 5) Mirror Type Cassette TEAC MTT-902T (C-90) Parts No. 4900015220 (Internal use)
- 6) Test Tapes
 - TEAC MTT-111 (Flutter, 3kHz)
 - TEAC MTT-150 (Level, Dolby B Type)
 - TEAC MTT-356 (Frequency, 31.5 Hz to 14 kHz)
- 7) Blank Tape
 - TEAC MTT-5561 (Type II) or equivalent

4-2 DEFINITION AND MEASUREMENT CONDITIONS

1. Standard voltage 0dBV = 1.0V
Reference:
LINE nominal input level: -10dBV (316mV)
PGM nominal output level: -10dBV (316mV)
2. The output load is 10 kΩ unless otherwise noted.
3. The output impedance of the oscillator connected to the MIC/LINE should be less than 10 kΩ
4. Performance checks and adjustments in playback or record mode should be performed with the tape speed set to LOW unless otherwise noted.
5. Before making performance checks and adjustments in playback or record mode, always demagnetize and clean components touching tape surface.

4-3 DISASSEMBLY OF MAJOR PARTS

Sometimes it is difficult to see how to disassemble the parts. The following explains how to remove the major parts.

For detailed disassembly instructions, refer to the Exploded View-1 (Page 33, 35, 38).

4-3-1 Trim Cover Assembly

- 1) Pull off each fader knob and control knobs on the top panel and remove the bottom cover.
- 2) Remove the nine tapping screws (a) and one screw (b) from the bottom side. Refer to Fig. 4-3-1.

NOTES: The screws behind the Assembly can be easily removed if the screwdriver is magnetized.

4-3-2 Mechanism Assembly

- 1) Remove bottom cover, remove the five screws (c) holding the mechanism assembly. Refer to Fig. 4-3-2.

4-3-3 Heads

- 1) Remove the head cover using a crab-eye driver.
- 2) Remove the bottom cover, and turn the reduction pulley (Refer to Fig. 4-3-2) by hand to bring the head base upon the PLAY position.
- 3) Remove one record/playback head mounting screw and the azimuth adjusting screw. When removing the erase head, remove two screws securing the head. (Refer to Fig. 4-3-3)

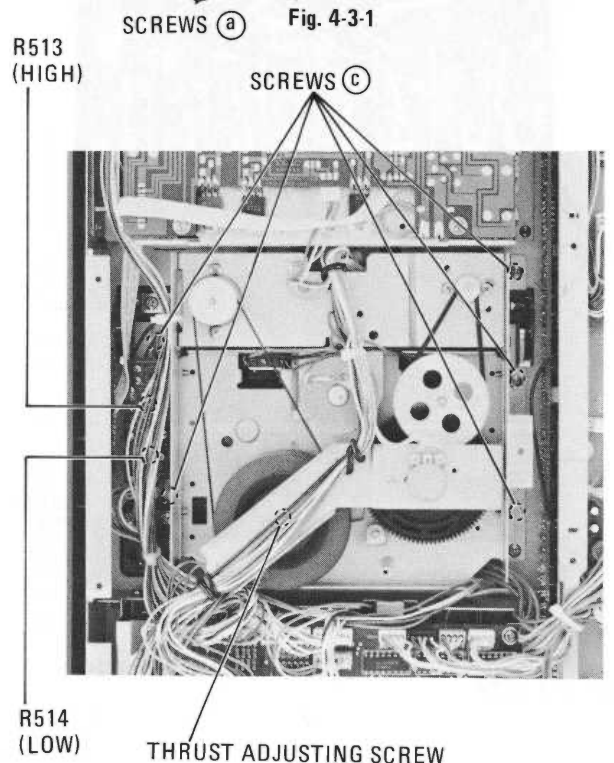
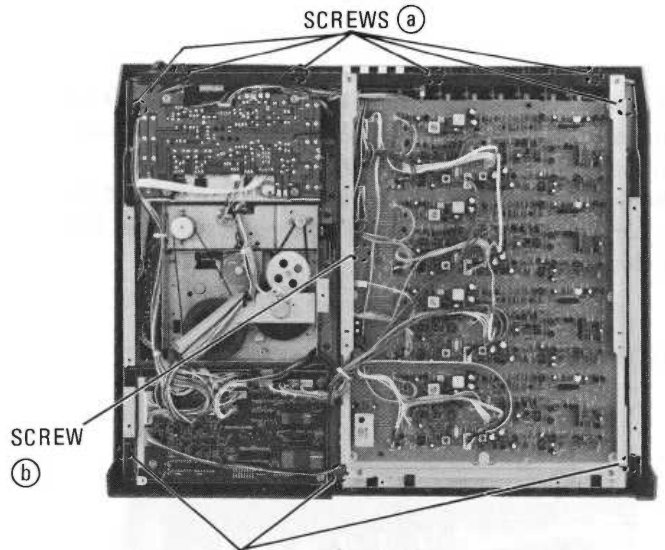


Fig. 4-3-2

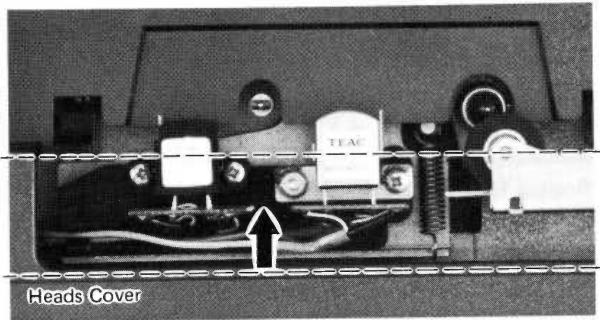


Fig. 4-3-3

4-3-4 Input Amplifier PCB Ass'y, Monitor Amplifier PCB Ass'y

- 1) Remove fader knobs and other control knobs on the top panel, and the mother PCB on bottom side.
- 2) Remove the screw (d) to remove the Input amplifier PCB Assembly, and screw (e) to remove the monitor amplifier PCB Assembly. Refer to Fig. 4-3-4

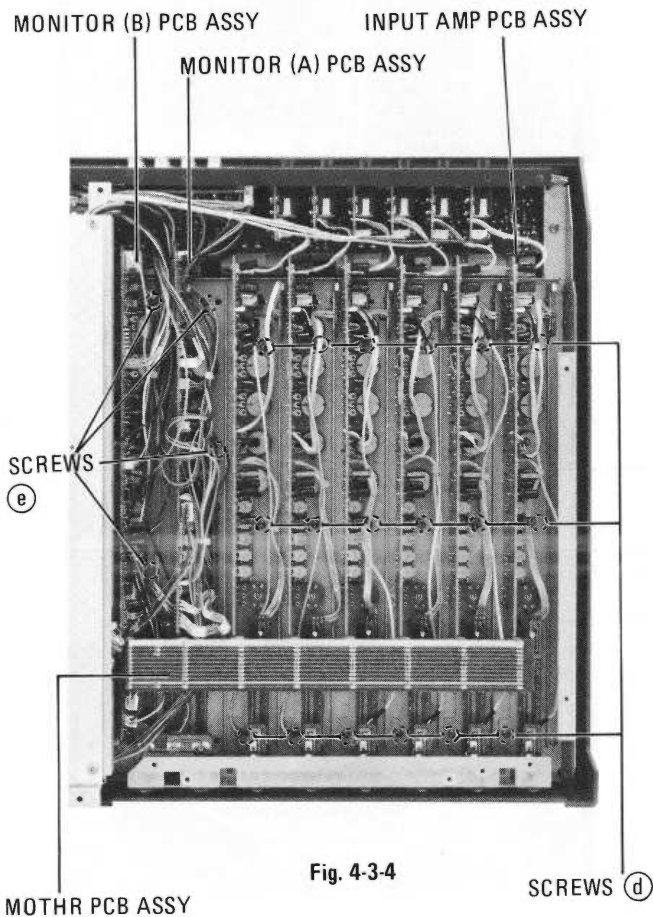


Fig. 4-3-4

4-4 CHECK AND ALIGNMENT OF TAPE DECK SECTION

4-4-1 Capstan Assembly Thrust

Turn the thrust adjusting screw (Plastic); Refer to Fig. 4-3-2. Provided on the bottom of the flywheel so that thrust of the capstan shaft is within 0.1 mm to 0.2 mm.

4-4-2 Micro Switch Assembly Clearance

This adjustment should be made for both the Cassette-In switch and the Record Protection switch.

First, loosen two microswitch mounting screws and adjust the mounting position of the switch so that the micro switch actuator is positioned within the setting range(s) as shown in Fig. 4-4-1.

After completion of the adjustment, actually load the tape deck with a blank tape, and check to see the switches turn on and off.

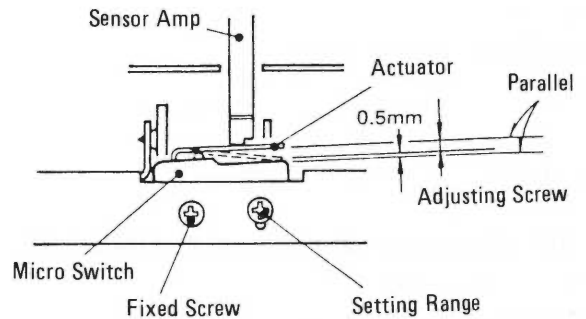


Fig. 4-4-1

4-4-3 Head Base Position

STOP Mode

- 1) With the deck set to STOP mode, observe stop position of the head base and note the position.
- 2) Turn the reduction pulley with your hand and observe whether the head base comes to the same position as noted or exceeds the position. If exceed, adjust the trim pot 552. (Refer to Fig. 4-4-2)

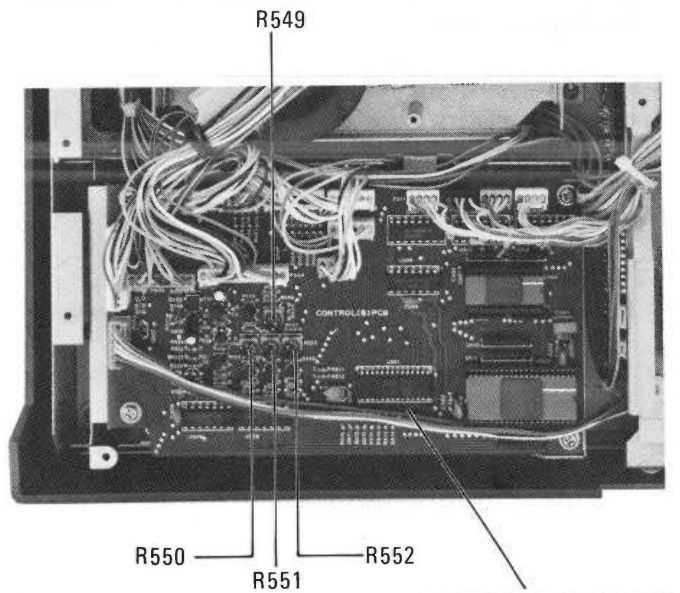


Fig. 4-4-2

3) Run the deck in PLAY mode, then STOP mode, and finally turn the power off. Repeat this sequence two times.

Then observe the stop position of the head base again. If the head base still exceeds the position noted, adjust R552 again and repeat the steps 1 and 3 until the head base comes to the most forward position.

FF and RWD Mode

Run the deck in the FF or RWD mode and make sure a clearance between each brake drum and the brake pad is approx. 1.5 to 2 mm. If not, adjust R550. (Refer to Fig. 4-4-2) After the adjustment has been completed, repeat switching operations from the STOP to FF or RWD two or three times and make sure the clearance "a" is within the specified range. If the "a" is not within 1.5 to 2 mm, adjust R550 again. Refer to Fig. 4-4-3.

PAUSE Mode

Set the deck to PAUSE mode and observe the clearance "b" between the pinch roller and capstan shaft. It should be approx. 0.5 to 1 mm. If not, adjust the trim pot R551 (Refer to Fig. 4-4-2). After completion of the adjustment, repeat switching operations from STOP to PAUSE mode two or three times, and make sure the clearance "b" is within the specified range. Also make sure there is a clearance "c" between the head base and a spring stud. (Refer to Fig. 4-4-3)

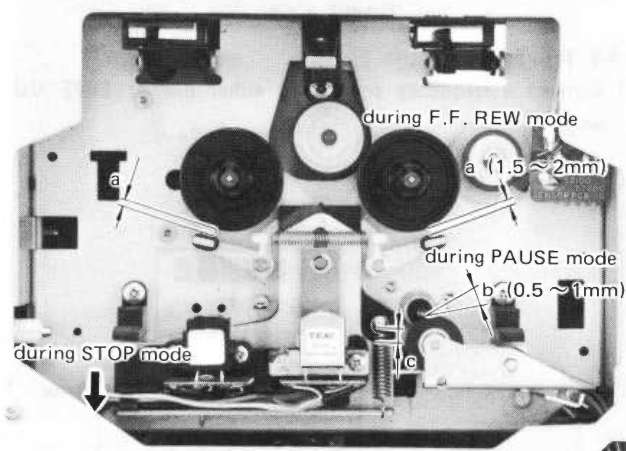


Fig. 4-4-3

4-4-4 Pinch Roller Pressure

First remove the bottom cover and the Trim cover as shown in section 4-3.

- 1) Turn the Cassette-In switch on with a finger or using a rubber ring.
- 2) Run the deck in PLAY mode and hook a tension gauge to a small opening on the pinch roller arm as illustrated.
- 3) Pull the gauge until the pinch roller moves away from the capstan shaft by approx. 2 mm, and then allow the pinch roller to just touch the capstan shaft again. Read the gauge when the pinch roller just starts to rotate.

The reading should be between 350 and 500 g.

NOTE: (1) During PLAY operation, make sure there is a little clearance "a" between the pinch roller arm and the spring arm. (Refer to Fig. 4-4-4 (A))

(2) When replacing the pinch roller arm spring, always position the spring around the lower half of the spring shaft as shown in the photo. (Refer to Fig. 4-4-4 (B))

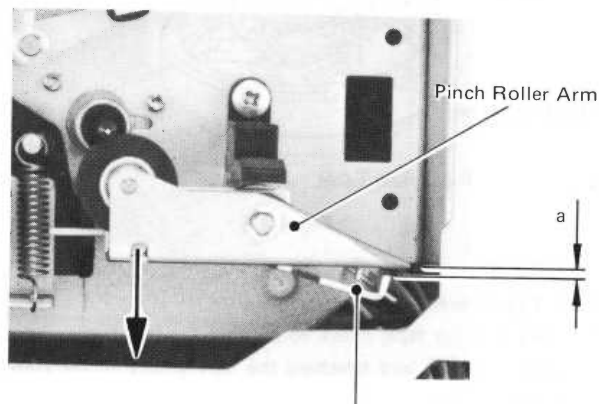


Fig. 4-4-4 (A) Spring Arm

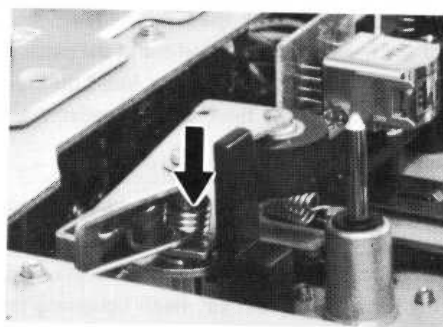


Fig. 4-4-4 (B)

4-4-5 Take-Up Torque

Take-up Torque For Playback & Recording

Load a cassette torque meter instead of a cassette tape in the cassette holder, and run the deck in PLAY mode. Take-up torque of the right reel table should be 40 – 50 g. If not, adjust the trim pad R549 (Fig. 4-4-2) to read 45 g-cm. After completion of the adjustment repeat the STOP and PLAY mode operations 2 to 3 times, and then make sure the torque reading is within the limits. Back tension torque (left reel table) should be 2 to 4 g-cm. If the torque is still out of the limits, adjust the torque adjusting ring provided on the right reel table. The torque can be adjusted in three values as shown in Fig. 4-4-5. Turn the torque adjusting ring with the tab A pulling slightly upward and place the tab on one of three stepped portions having pawls to fix the tab.

FF and REW Torque

Load a cassette torque meter in the cassette holder and measure starting torque for both F.F and REW operations with the tape rewound close to beginning of the tape or wound close to end of the tape, respectively.

The reading should be:

F.F. torque (right reel table): between 55 and 150 g-cm.

REW torque (left reel table): between 80 and 150 g-cm.

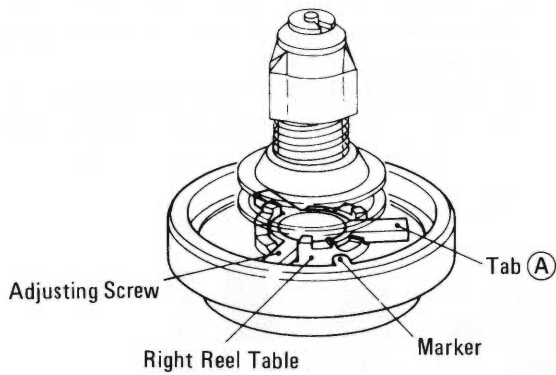


Fig. 4-4-5

4-4-6 Tape Travel

- 1) Using a mirror tape, check to see that the tape is running stably without curling and touching the tape guides on the erase and rec/play heads.
- 2) If there is curling of the tape affecting the response or damaging the tape, it is necessary to check the head guide height, perpendicularity of the head face, and alignment of the pinch roller in relation to the capstan. If the guide is low, insert the required amount of 0.1 mm or 0.2 mm thick washers under the head mounting legs.

NOTE: Always adjust the head azimuth when the head height was adjusted.
 Be sure not to tighten the head fixed screw too hard. Turn the screw by approx. 45° (with tightening torque of 2 kg-cm after the screw has started to work).

4-4-7 Head Azimuth

Fine adjustment of the record/playback head should be made after the tape travel check had been completed. Before proceeding the adjustment, remove the head cover mounted on the Trim panel assembly.

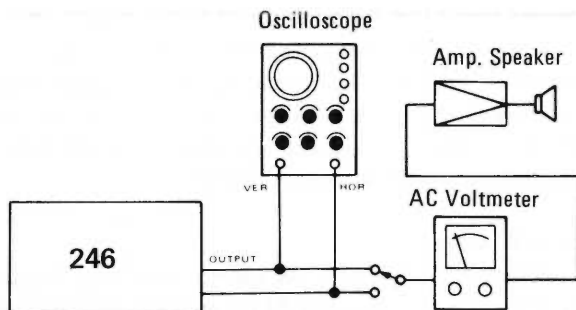


Fig. 4-4-6

- 1) Connect a vertical input terminal of an oscilloscope to the TAPE OUT "1" jack and a horizontal input terminal to the TAPE OUT "4" jack.
- 2) Load the deck with a test tape MTT-150 and playback the tape at the Low speed.

- 3) First, reproduce a test tone, and coarsely adjust the azimuth adjusting nut to obtain approx. zero phase difference as shown in the illustration below. •
- 4) Reproduce the test tape MTT-357 and precisely adjust the head azimuth adjusting screw so that maximum and equal output is obtained at 10 kHz in each channel.

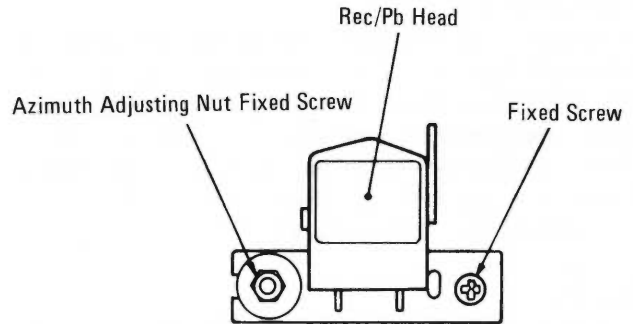


Fig. 4-4-7

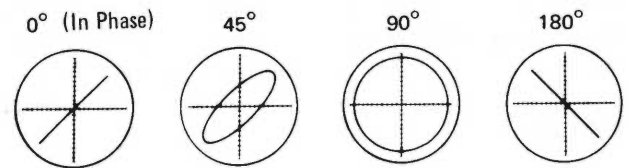


Fig. 4-4-8

4-4-8 Tape Speed

- 1) Connect a frequency counter to either one of TAPE OUT jacks.

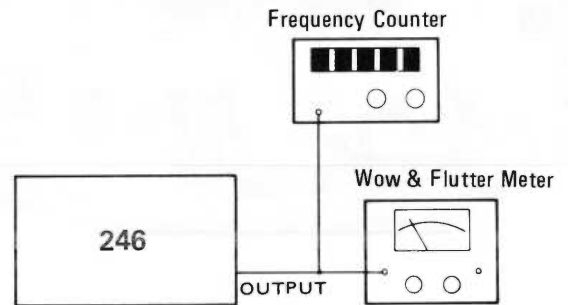


Fig. 4-4-9

- 2) Playback a wow & flutter test tape MXT-111 (tape speed 9.5 cm/sec), and following values will be obtained.
 Deviation : 3,006 Hz ± 30Hz
 Width of deviation : Within 30 Hz
 Pinch control range : Min. less than 2610 Hz at fully CCW Max. higher than 3390 Hz at fully CW

* Minimum tape speed is obtained with the pitch control rotated fully counterclockwise and maximum tape speed with fully clockwise.
 Test tapes: MTT-111 for low speed
 MXT-111 for high speed

- 3) If the speed is out of the limits, adjust as follows:
 - a. Remove the bottom cover and the Trim cover assembly as mentioned in section 4-3.
 - b. Clean the tape path and check the pinch roller pressure and take-up torque.
 - c. If they are normal, place the PITCH control in the center "0" position, and reproduce approx. mid portion of the test tape.
 - d. Adjust the trim pots (Refer to Fig. 4-3-2) provided on the rear side of the PITCH control variable resistor with a small "-" driver to obtain 3,000 Hz \pm 5 Hz reading on the frequency counter.

The adjustment should be performed at least one minute after the capstan motor has been started to rotate.

- Low speed : R514
- High speed : R513

4-4-9 Wow and Flutter

Before measuring wow and flutter, read the following and decide which one of two methods is to be used. Then connect test equipment as shown in Fig. 4-4-10, or connect a wow and flutter meter to one of TAPE OUT jacks (and a signal oscillator to the PGM BUSS IN Jack).

1) Reproduce Method:

Wow & Flutter is measured by reproducing a Wow & Flutter Test Tape.

Record/Reproduce Method: Wow and Flutter is measured by reproducing a 3 kHz tone recorded on a blank tape with the tape deck under test.

Use a blank tape of MTT5561 or equivalent.

NOTE: When measuring with the Record/Reproduce method, the recorded section should be reproduced repeatedly to obtain a mean value.

Be careful not to read the meter for those parts of the tape in which wow and flutter components in recording and reproducing cancel each other.

- 2) Set the wow and flutter meter controls to the standard to be used. Set the weighting control to the DIN/IEC/ANSI position or JIS/NAB position.

- 3) The measurement should be performed at both beginning and end of the tape. The measurement results will differ slightly according to the method and equipment used.

NOTE: Proceed to the measurement after cleaning the tape path, especially capstan shaft, pinch roller, and the head surfaces.

Reproduce Method:

- High speed 0.04 (NAB weighted)
 \pm 0.06 (DIN/IEC/ANSI weighted)
- Low speed 0.05 (NAB weighted)
 \pm 0.09 (DIN/IEC/ANSI weighted)

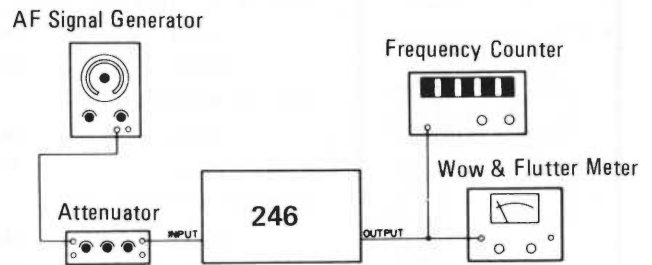


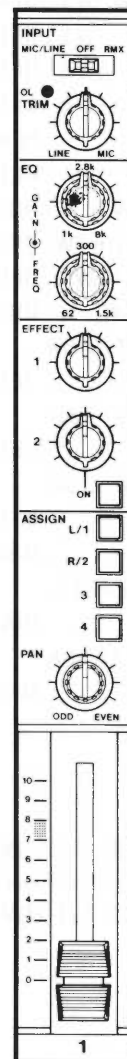
Fig. 4-4-10

4-5 SIGNAL PATH AND RESPONSE CHECK OF MIXER SECTION

The internal adjustment of the Mixer Section is restricted to the item 4-5-2, Level Adjustment of VU Meter.

4-5-1 Setting of Each Switch and Control

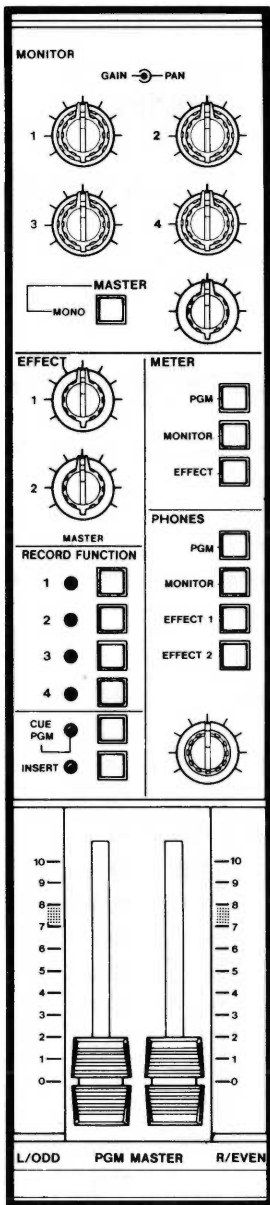
Before checking, set each switch and control in the mixer section as follows:



- | | | |
|-----------------------|--------|----------|
| (1) INPUT LEVER SW | : | MIC/LINE |
| (2) TRIM VR | : | LINE |
| (3) EQ VR (1K - 8K) | FREQ : | 1K |
| | GAIN : | Center |
| (4) EQ VR (62 - 1.5K) | FREQ : | 62 |
| | GAIN : | Center |
| (5) EFFECT 1 VR | : | MIN |
| (6) EFFECT 2 | SW : | OFF |
| | VR : | MIN |
| (7) ASSIGN SW | 1/L : | OFF |
| | 2/R : | OFF |
| | 3 : | OFF |
| | 4 : | OFF |
| (8) PAN VR | : | ODD |
| (9) INPUT FADER | : | MIN |

INPUT 1 ~ 6

Fig. 4-5-1 (A)



PGM MASTER

Fig. 4-5-1 (B)

- (10) MONITOR VR 1
GAIN : MIN
PAN : L
- (11) MONITOR VR 2
GAIN : MIN
PAN : L
- (12) MONITOR VR 3
GAIN : MIN
PAN : L
- (13) MONITOR VR 4
GAIN : MIN
PAN : L
- (14) MASTER VR : MIN
- (15) MONO SW : OFF
- (16) EFFECT MASTER 1 VR : MIN
- (17) EFFECT MASTER 2 VR : MIN
- (18) REC FUNCTION SW 1 : OFF
SW 2 : OFF
SW 3 : OFF
SW 4 : OFF
- (19) CUE, PGM SW : PGM
- (20) INSERT SW : OFF
- (21) METER PGM SW : ON
MONITOR SW : OFF
EFFECT SW : OFF
- (22) PHONES PGM SW : ON
MONITOR SW : OFF
EFFECT 1 SW : OFF
EFFECT 2 SW : OFF
- (23) PGM MASTER FADER
L/ODD : MIN
R/EVEN : MIN
- (24) PGM MASTER FADER
L/ODD : MIN
R/EVEN : MIN

3) Push the CUE/PGM switch and check that VU meter of PGM/TRK indicates 0VU under the above condition when PGM output -10dBV is obtained.

Adjustment is made through a hole on the rear panel with the following half-fixed resistors.

- CH 1 : R 104 CH 3 : R 304
- CH 2 : R 204 CH 4 : R 404

4) With the condition set in the above step 2, check PGM/MONITOR/EFFECT VU meter indicates 0VU with the METER switch placed in the PGM position.

Adjustment is made with the following half-fixed resistor.

- PGM L : R103
- PGM R : R203

4-5-3 PEAK LED of VU Meter

Check PEAK LED on the VU meter of PGM/TRK 1 ~ 4 lights up when PGM OUT is turned to -5dBV (562mV) in the steps 1 ~ 2 of the above item 4-5-2.

Check also the LED turns off when PGM OUT is turned to -6dBV (501mV) reducing 1dB.

4-5-4 INSERT Output Level

1) As shown in the following figure, connect the level meter to the insert terminal, (2 - 6) of the MIC/LINE amplifier using RCA phone plug.

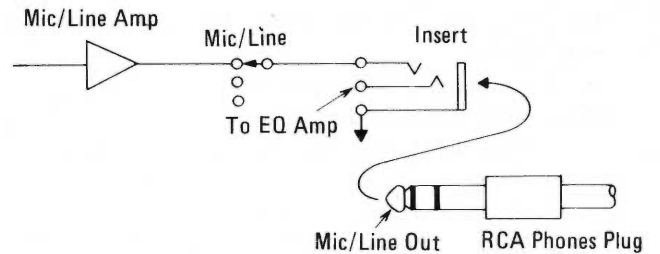


Fig. 4-5-2

- 2) Set INPUT selector to the MIC/LINE side.
- 3) Check output level of INSERT is -10dBV (0.3V) ± 1dB when 1 kHz signal at the reference level is applied to the MIC/LINE INPUT 1 (2 - 6) terminal(s) with the TRIM control set.
With TRIM control set to MIN: input signal -10 dBV
With TRIM control set to MAX: input signal -60dBV (1mV)
- 4) As for channels 5 and 6, turn the INPUT selector to the LINE (B) side and apply -10dBV signal to LINE (B) IN terminal. Then proceed to check in the same manner.

4-5-5 OL (OVER LOAD) Indicator

- 1) Check LED lights up when the input level is increased by 25dB from the reference level in the step 3 of the above item 4-5-4 and the LED turns off when the input level is decreased by 3dB (22dB).
- 2) Check output waveform of INSERT is not distorted under the above condition.

4-5-2 PGM OUT Level and VU Meter

- 1) Apply -10dBV (0.3V), 1 kHz signal to the PGM BUSS IN terminal, then connect the level meter to the PGM OUT terminal.
- 2) Adjust PGM MASTER fader so that -10dBV (0.3V) PGM output is obtained.

Fader position (both L/ODD and R/EVEN) :

Reading within 7 ~ 8

Deviation between channels :

Within ±1dB with the standard set at CH 1, 2.

4-5-6 MIC/LINE INPUT → PGM OUT

- 1) Turn on the PAN to ODD and ASSIGN to L/1 with PGM Master Fader in the steps 1, 2 of the above item 4-5-2 and TRIM in the item 4-5-4 set.
- 2) Adjust the INPUT fader so that the output level of PGM OUT 1/L turns to -10dBV (0.3V) with the reference input level signal on the MIC/LINE INPUT 1 terminal.
Fader position at this time is within the range of 7 ~ 8.
- 3) When completing the above procedure 2, push ASSIGN switches for desired channels and turn the PAN control toward ODD or EVEN position to see the signal is shared to each PGM output terminal.
Output level is decreased by approx. 2.5dB from the reference output level (-10dBV) with the PAN control set at the center position. (12 o'clock)
As for the input channels 2 - 6, check for the ASSIGN and PAN in the same manner.

4-5-7 EQ Response (MIC/LINE IN → PGM OUT)

- 1) Apply the reference input signal to the MIC/LINE INPUT terminal as described in the step 1, 2 of the above item 4-5-6, and set in a way that the signal with the reference output level -10dBV is output to PGM OUT 1/L terminal.
- 2) Turn the EQ knob (external axis) fully to the "62" side, then set the GAIN knob of the EQ knob (internal axis) at the right most position.
Check the peak level of 62 Hz is within $60\text{ Hz} \pm 20\%$ ($48\text{ Hz} \sim 72\text{ Hz}$) by changing the frequency of the input signal.
Check also the output level at that time exceeds the reference level by more than $+10\text{dB}$.
Check the output level lowers the reference level by more than -10dB with the GAIN knob turned left most.
- 3) Return the EQ and GAIN knobs moved for proceeding the check to their center position (12 o'clock) after the check has been completed.
- 4) Check each frequency response following the above procedures 2 and 3.
Frequency response is within $\pm 20\%$ of the input signal frequency, and PGM OUT level varies from more than $+10\text{dB}$ at maximum to less than -10dB at minimum.

4-5-8 MIC/LINE INPUT → EFFECT OUT

- 1) Following the procedures 1 of the item 4-5-7 just above, set INPUT fader so that the output level of PGM OUT 1/L turns to -10dBV .
- 2) Turn on the EFFECT (2) switch of input and turn the EFFECT knobs 1 and 2 to their maximum position.
Then adjust EFFECT MASTER knobs 1 and 2 so that the output level of EFFECT OUT 1 and 2 turns to -10dBV (0.3V).
Check the EFFECT MASTER knob is between 2 and 3 o'clock.

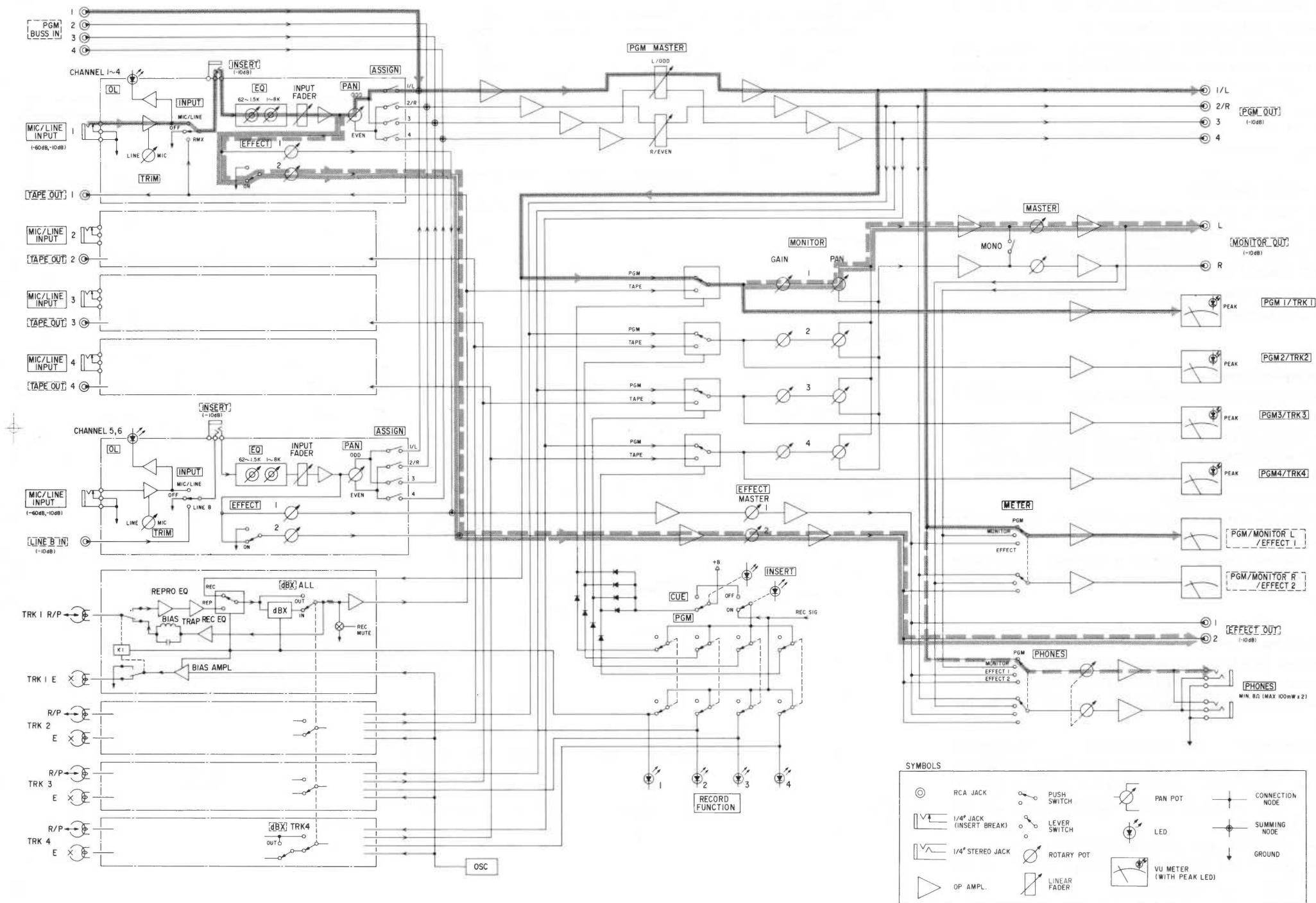


Fig. 4-5-3

4-5-9 MIC/LINE INPUT → MONITOR OUT

- 1) Following the procedures 1 of the item 4-5-7, set the output level of PGM OUT 1/L to -10dBV.
- 2) Turn on the CUE/PGM switch, then set the MONITOR GAIN 1 to the maximum and MONITOR PAN 1 to L (left most).
- 3) Turn MONITOR MASTER knob so that the output level of MONITOR OUT L turns to -10dBV (0.3V).
Check the MONITOR MASTER knob is between 2 and 3 o'clock.
- 4) Check the output level of MONITOR OUT L is decreased by 6 ± 1.5 dB from the reference level, when MASTER MONO switch is turned on.
- 5) As for MONITOR OUT R, check for it with the MONITOR PAN 1 set to R (right most).

4-5-10 Frequency Response

- 1) Check frequency response when the reference output -10dBV is output from item 4-5-6 (MIC/LINE INPUT → PGM OUT), 4-5-8 (MIC/LINE INPUT → EFFECT OUT) and 4-5-9 (MIC/LINE INPUT → MONITOR OUT) respectively.
Check output is within ± 1 dB from the reference output of 1 kHz, varying frequency of the input signal from 20 Hz ~ 20 kHz.

4-5-11 Headphone Output

- 1) Connect an 8 ohm resistor and a level meter to the PHONES 1 jack on the front panel.
- 2) With the condition that the reference output signal -10dBV is output to the PGM OUT 1/L terminal in the item 4-5-6, place the PHONE switch in the PGM position, and adjust the phone knob to its maximum position.
- 3) When the phone knob is adjusted to its maximum position, the output level of the channel L exceeds 900mV.
- 4) Check for the channel R output in the same manner, when the reference output is transmitted to the PGM OUT 2/R terminal.

4-5-12 Pingpong Recording

The pingpong recording is to record signals, that are created by mixing signals applied to the PGM BUSS IN (and MIC/LINE IN) inputs with those being played back from a tape track onto another tape track.

Fig. 4-5-4 denotes an example of the signal route for the pingpong recording. Signals played back from the track 1 pass through the dbx decoder, INPUT selector and EQ amplifier, and then split into two routes by the PAN control to be mixed with signals played back from PGM BUSS IN.

The mixed signals, after passing through PGM OUT and dbx encoder, can be recorded on the track 3 and 4 if the RECORD FUNCTION switch are placed in 3 and 4 positions.

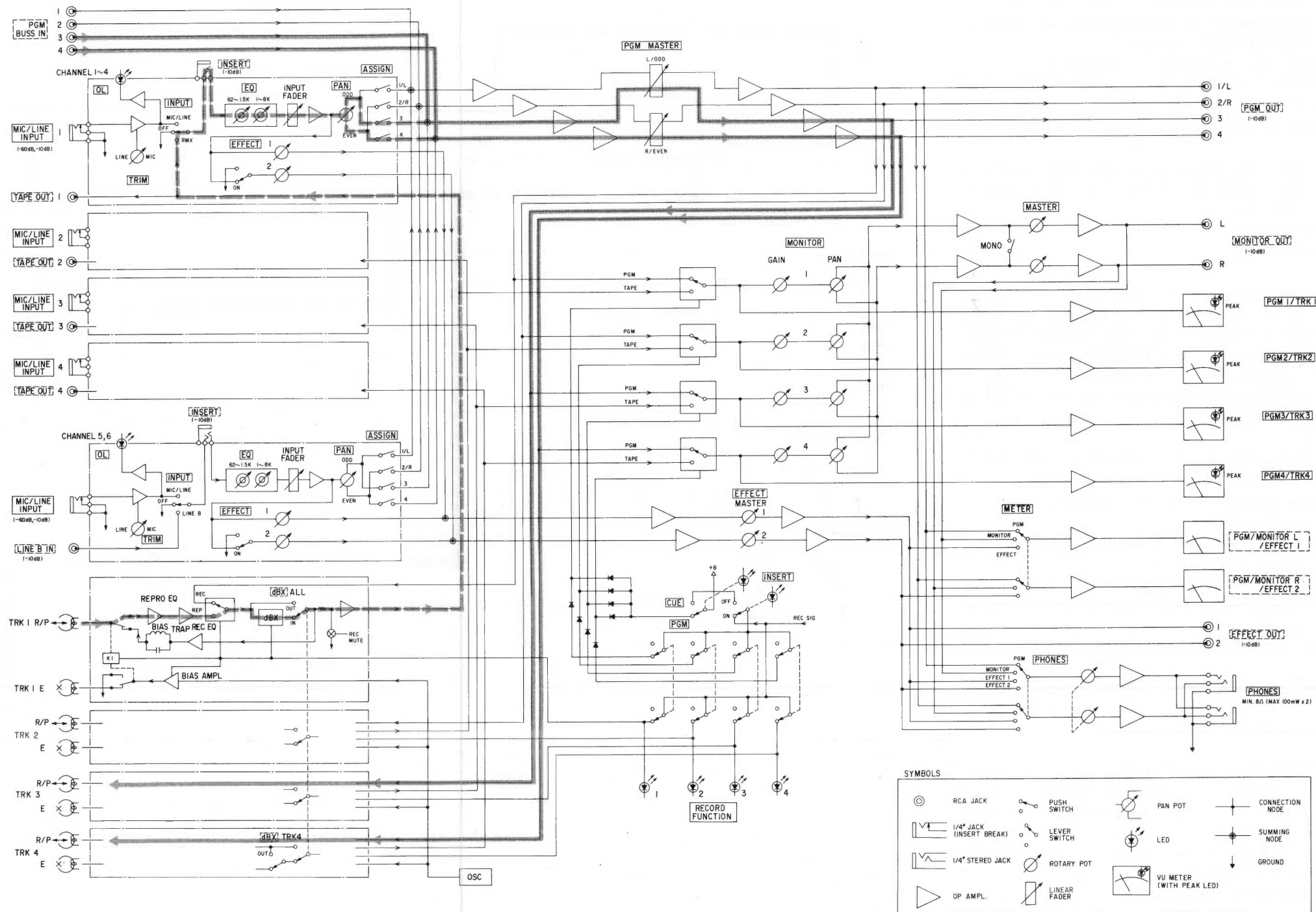


Fig. 4-5-4

4-6 RECORD/PLAYBACK AMPLIFIER CHECKS AND ADJUSTMENT

4-6-1 Playback Level

- 1) Connect a level meter to the TAPE OUT "1" jack on the rear panel.
- 2) Playback a test tape MTT-150, 400 Hz, and adjust the trim pot R712 for -7 dBV (447 mV) reading on the level meter. (Refer to Fig. 4-6-1) Under this condition, the VU meter will deflect $VU \pm 1$

when the CUE/PGM switch below the RECORD FUNCTION switch is set to the PGM position.

- 3) Connect the level meter to the remaining channel outputs (2, 3, 4) and proceed to the adjustment in the same manner by adjusting.

TRK 1 ~ TRK 4: R712 ~ R742

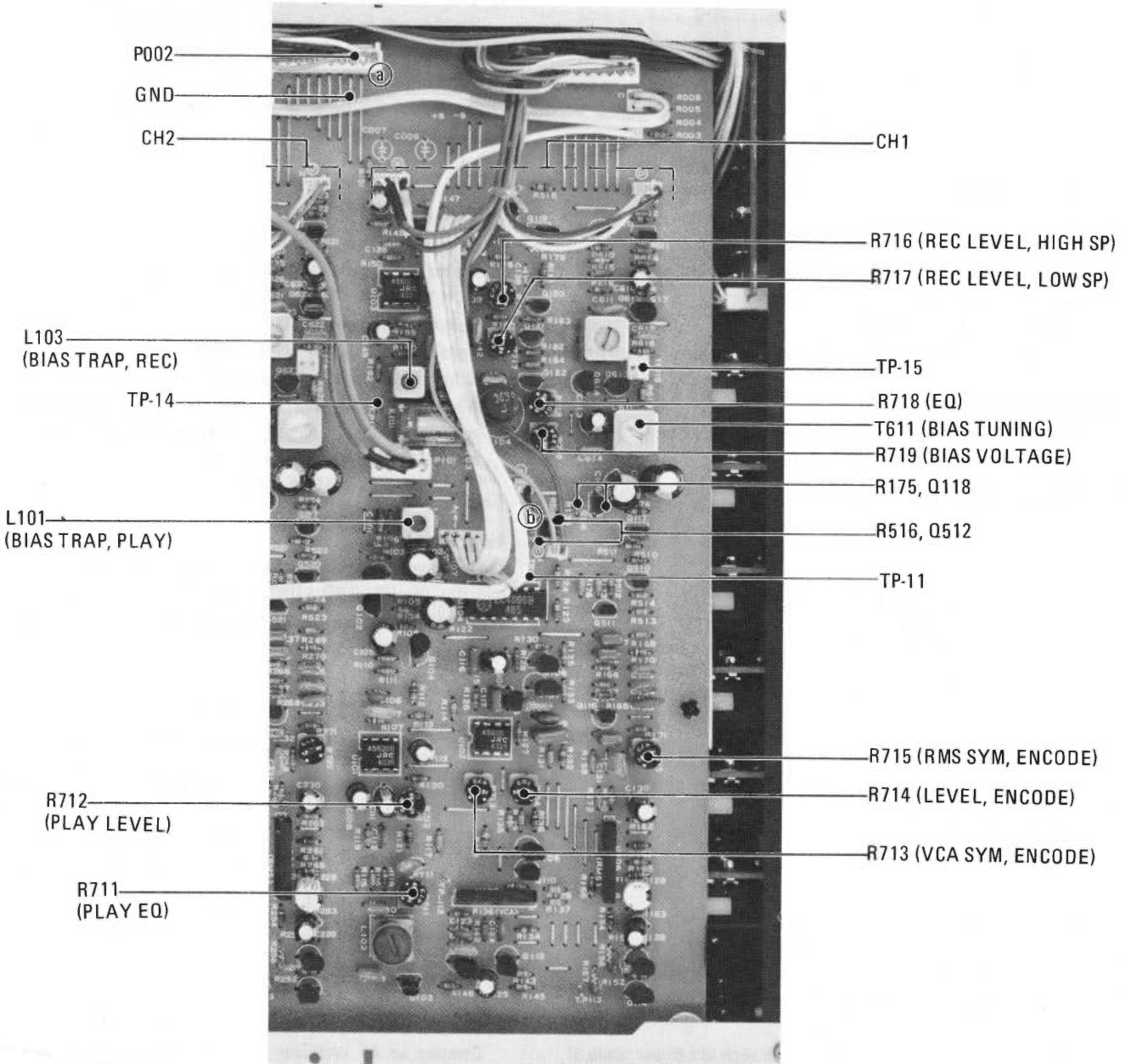


Fig. 4-6-1

4-6-2 Playback Frequency Response

- 1) Connect a level meter to the TAPE OUT "1" jack on the side panel.
- 2) Playback a test tape MTT-356 and reads the output level; it should be within the following limits.

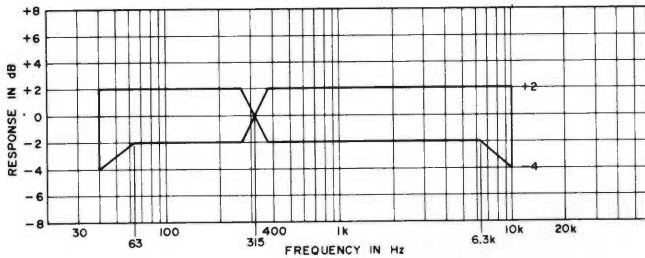
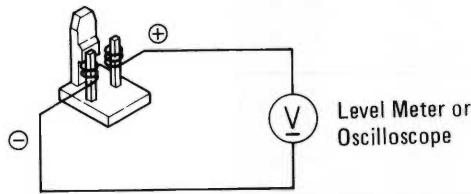


Fig. 4-6-2

- 3) If the output level is out of the limits, adjust the trim pot R711.
- 4) For the remaining channels (2, 3, 4), also check in the same manner.
CH 1 ~ CH4: R711 ~ R741
- 5) Set the tape speed to HIGH. Reproduce 6.3 kHz signal (12.6 kHz) on the test tape and make sure to see:
315 Hz x 2: 0dB ± 1.5dB
6.3 kHz x 2: 0dB +3 dB / -4 dB .. referred to the value of 315 Hz x 2.

4-6-3 Bias Tuning (T611 – 641)

- 1) Connect a level meter or an oscilloscope to the TP terminal of a record/playback amplifier to be adjusted.
CH 1 ~ CH 4: TP 15 ~ TP45



- 2) Load a blank tape MTT-5561 and set only the channel to be adjusted to the record mode.
- 3) Adjust each coil for minimum level.
CH 1 ~ CH 4: T 611 ~ T641

Notes:

- * To protect transistors perform adjustment with only the channel to be adjusted set to the record mode.
- * In this adjustment, if the bias level is set to maximum, the bias amplifier may be over loaded and damaged. So please refrain to set the bias level to the maximum.
- * When adjusting, use non-inductive driver such as a driver made of plastic, wood, etc.

4-6-4 Bias Trap

The bias trap has been fixed at the factory and no adjustment is necessary except when:

- a. the REC/PB head was replaced.
- b. the REC/PB amplifier PCB unit was replaced.
- c. Excessive bias leakage was observed.

Playback system (L101 – 401)

- 1) Connect a level meter or an oscilloscope to the TAPE OUT jack to be adjusted on the rear panel.
- 2) Load the tape deck with a blank tape (MTT5561) and set the channels to be adjusted to the PLAY mode and the remaining channels to REC mode.
- 3) Adjust each bias trap for minimum bias leakage (minimum reading on the meter or minimum amplitude on scope display) from the adjacent channels.
CH 1 ~ CH 4: L101 ~ L401

Record system (L103 – 403)

- 1) Connect the level meter or the oscilloscope to the TP terminal of the record/playback amplifier to be adjusted.
CH 1 ~ CH 4: TP14 ~ TP44
Common terminal = GND
- 2) Load the deck with a blank tape MTT-5561 and set the channel to be adjusted to the record/pause mode at no signal.
- 3) Adjust each bias trap for minimum bias leakage (minimum reading on the meter or minimum amplitude on the scope display) from the adjacent channels.
CH 1 ~ CH 4: L103 ~ L403

4-6-5 Bias Voltage

The bias voltage is applied to a bias trim pot for each track by selecting the RECORD FUNCTION switches properly and the bias voltage to be applied to the head can be varied to a considerable level by rotating the trim pot.

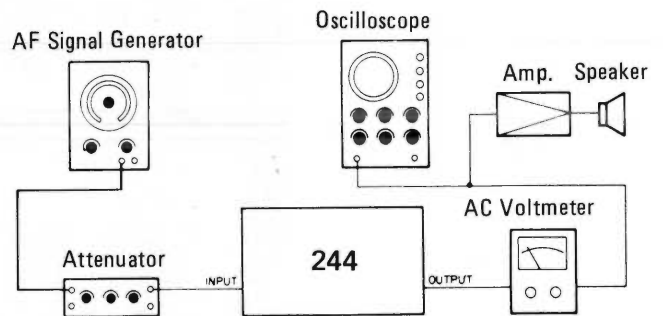


Fig. 4-6-3

- 1) Connect the test equipments as shown in Fig. 4-6-3.
Connect an AF oscillator to the PGM BUSS IN "1" jack and a level meter to the TAPE OUT "1" jack. Adjust PGM MASTER fader until the PGM OUT level of -10 dBV is obtained as mentioned under steps 1 and 2 in the item 4-5-2.
- 2) Load a blank tape MTT-5561 in the deck.

- 3) Place the RECORD FUNCTION switch in the TRK "1" position to set the TRK "1" to the record mode.
Also set the dbx to out position and the tape speed to HIGH. Under this condition, the VU meter will show 0VU. If the meter deflection error is observed, perform readjustment as shown in the item 4-5-2.
- 4) Reduce the input signal level by 20 dB from the reference level or to -30 dBV (31.6mV).
- 5) Record a 6.3 kHz signal and then playback the signals. Adjust the bias adjustment trim pot R719 so that the bias current increases until the output level drops by 3 dB from the peak value.

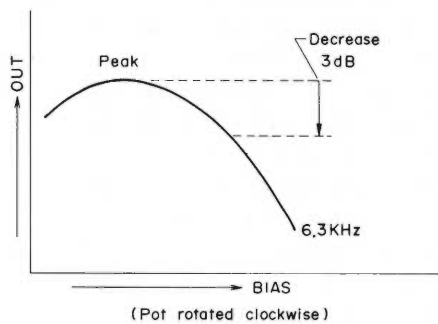


Fig. 4-6-4

- 6) Adjust for the remaining tracks in the same way.
TRK1 ~ TRK4: R719 ~ R749

4-6-6 Record Level

- 1) Connect test equipments as shown in Fig. 4-6-3, and adjust PGM MASTER fader on the front panel so that -10 dBV is obtained at the PGM OUT jack as mentioned in the item 4-5-2 (steps 1 and 2).
- 2) Load a blank tape MTT-5561 in the deck.
- 3) Set the TRK "1" to the record mode using the RECORD FUNCTION switch.
- 4) Record an input signal of -10 dBV, 400 Hz at Low speed. Playback the signal just recorded and adjust R717 until -10 dBV output is obtained at the TAPE OUT "1" jack.
(In the similar way adjust R716 at HIGH speed modes)
- 5) For the remaining tracks, adjust the recording level in the same way.
LOW speed CH 1 ~ 4 : R717 ~ R747
HIGH speed CH 1 ~ 4 : R716 ~ R746

4-6-7 Overall Frequency Response

- 1) Connect the test equipments as shown in Fig. 4-6-3 and adjust PGM MASTER fader so that -10dBV is obtained at the PGM OUT jack as mentioned under the item 4-5-2 (steps 1 and 2).
- 2) Load a blank tape MTT-5561 in the deck.
- 3) Decrease the input signal level by 20dB from the reference level or set the input signal level to -30 dBV (31.6mV).

- 4) Vary the input signal frequency while recording at both tape speeds, and check frequency response. For the specifications, refer to Fig. 4-6-5.
- 5) If poor frequency response is observed over higher frequencies at low speed, adjust the trim pots:
CH 1 ~ CH 4 : R718 ~ R748

* If the output reading is out of the limits, readjust the bias voltage as shown under 4-6-5. When the high frequency output level is lower than the limit, decrease the bias voltage slightly, and when higher increase the bias slightly. However, recording distortion may increase if the bias voltage is lowered excessively, so make sure the distortion is within the limit, at 400 Hz.

NOTE: Varying the bias voltage may upset the recording level adjustment, so always make sure the recording level and readjust the level again as necessary by referring to the section 4-6-6.

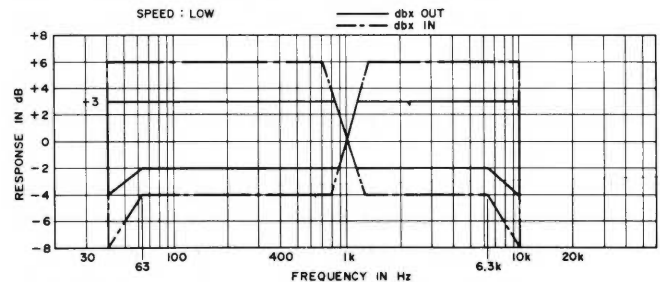


Fig. 4-6-5 (A)

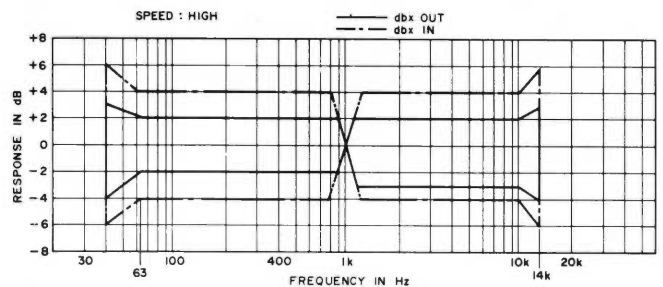


Fig. 4-6-5 (B)

4-6-8 Overall Distortion

- 1) Set and adjust the test setup as mentioned under the step 1 in item 4-6-6 Record Level.
- 2) Vary the frequency of the reference input signal to 1,000 Hz, and record and playback the frequency.
- 3) Measure the distortion; it should be less than 2.0% at LOW speed or less than 1.8% at HIGH speed.
If not:
 - * Readjust the bias voltage.
 - * Try to erase the erase head and record/playback heads, or replace the head(s).
 - * Check for overall S/N.

4-6-9 Overall SN Ratio

- 1) Set and adjust the test set-up as mentioned under the step 1 in item 4-6-6 Record Level.
- 2) Record the reference input signal, and then remove the input plug and continue the recording with no signal applied.
- 3) Playback both the reference signal and no signal just recorded and read the level difference between the outputs.
- 4) The difference (SN) should be higher than 45 dB for each channel at both the LOW and HIGH speed mode, when measured through a 20 Hz to 20 kHz filter.

If the SN is out of the limit:

- * Erase the erase head, record/playback heads and tape path with a tape eraser.
- * Check for normal erasing ratio.
- * Readjust the bias traps.
- * Recheck the SN by using another test tape.

4-6-10 Erasing Ratio

- 1) Connect test equipments as shown in Fig. 4-6-6 and adjust the controls and switches as mentioned under the step 1 in item 4-6-6, Record Level.
- 2) Adjust the signal generator to provide 1 kHz, 0 dBV (1V) and record it. Playback the signal just recorded and read, and note the output level.
- 3) Rewound the tape up to the beginning of the tape just recorded. Remove the plug from the PGM BUSS IN jack and then record no signal on the tape just recorded with the 1 kHz signal.
- 4) Rewound the tape just recorded with no signal and playback it. Read the output level with the level meter, the sensitivity of which is increased.
- 5) Compare the output levels obtained in the steps 2 and 4; the level difference should be higher than 65 dB for each channel at both LOW and HIGH speed.

If not :

- * Clean the tape transport path.
- * Check the tape transport mechanism.

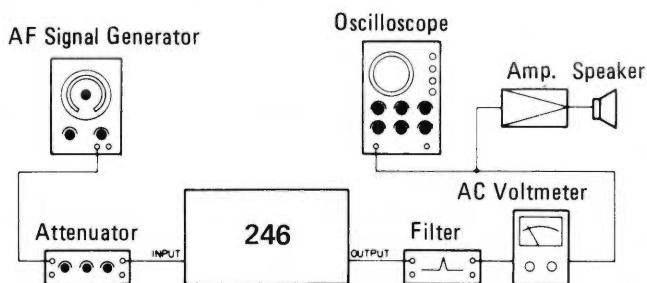


Fig. 4-6-6

4-6-11 Crosstalk Between Channels

- 1) Set and adjust output level -10 dBV at PGM OUT as mentioned under step 1 in 4-6-6 Record Level.

- 2) Record the reference signal of 1 kHz, -10 dBV (0.3V) on an adjacent channel to be measured. Rewound the tape just recorded and playback it. Measure the leakage output levels to the adjacent channels through a 1 kHz filter, and measure ratio(s) against the reference level.
- 3) The ratio should be higher than 50 dB for each channel.

4-6-12 dbx Amplifier

Adjustment is not required except when recording/reproducing amplifier PCB Ass'y is replaced.

ENCODE Amplifier

1 RMS SYM

- 1) Connect an oscilloscope between the recording/reproducing amplifier TP-13 (\sim TP-43) and pin 3 of the connector P002 (Refer to GND, Fig. 4-6-1 (a)).
- 2) Apply signal of -10 dBV (0.3V), 100Hz to CH1 (\sim 4) of PGM BUSS IN and set PGM MASTER fader so that PGM OUT level obtains -10 dBV.
- 3) Insert a cassette half into the deck, then set 1 (\sim 4) at the REC/PAUSE mode using dbx In.
- 4) Adjust the half-fixed resistor R715 (\sim R745) in a way that waveform of TP-13 (\sim TP-43) terminal turns to a sine wave with 200Hz as shown in Fig. 4-6-7.

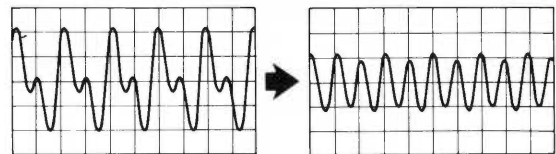


Fig. 4-6-7

2 VCA SYM

- 1) Apply step wave (a) signal from the dbx designated circuit as shown in Fig. 4-6-8 to TP-13 (\sim TP-43) terminal. Then connect TP-11 (\sim TP-41) terminal to pin 3 of the connector D002 (Refer to GND, Fig. 4-6-1 (a)) to lead to the ground.
- 2) Connect TAPE OUT 1 (\sim 4) terminal to the "VER" side of the oscilloscope and sawtooth signal (b) to the "HOR" side.
- 3) Short-circuit both ends of resistor R516 (\sim R546) or in-between of base and emitter (Refer to Fig. 4-6-1 (b)) of Q512 (\sim Q542).
- 4) As in the item 1 RMS SYM, set the deck CH 1 (\sim 4) at REC/PAUSE mode using dbx IN.
- 5) Adjust the half-fixed resistor R713 (\sim R743) in a way that waveform of the oscilloscope obtains the minimum voltage value (maximum; less than 5mV) as shown in Fig. 4-6-9.

Function Generator Schematic

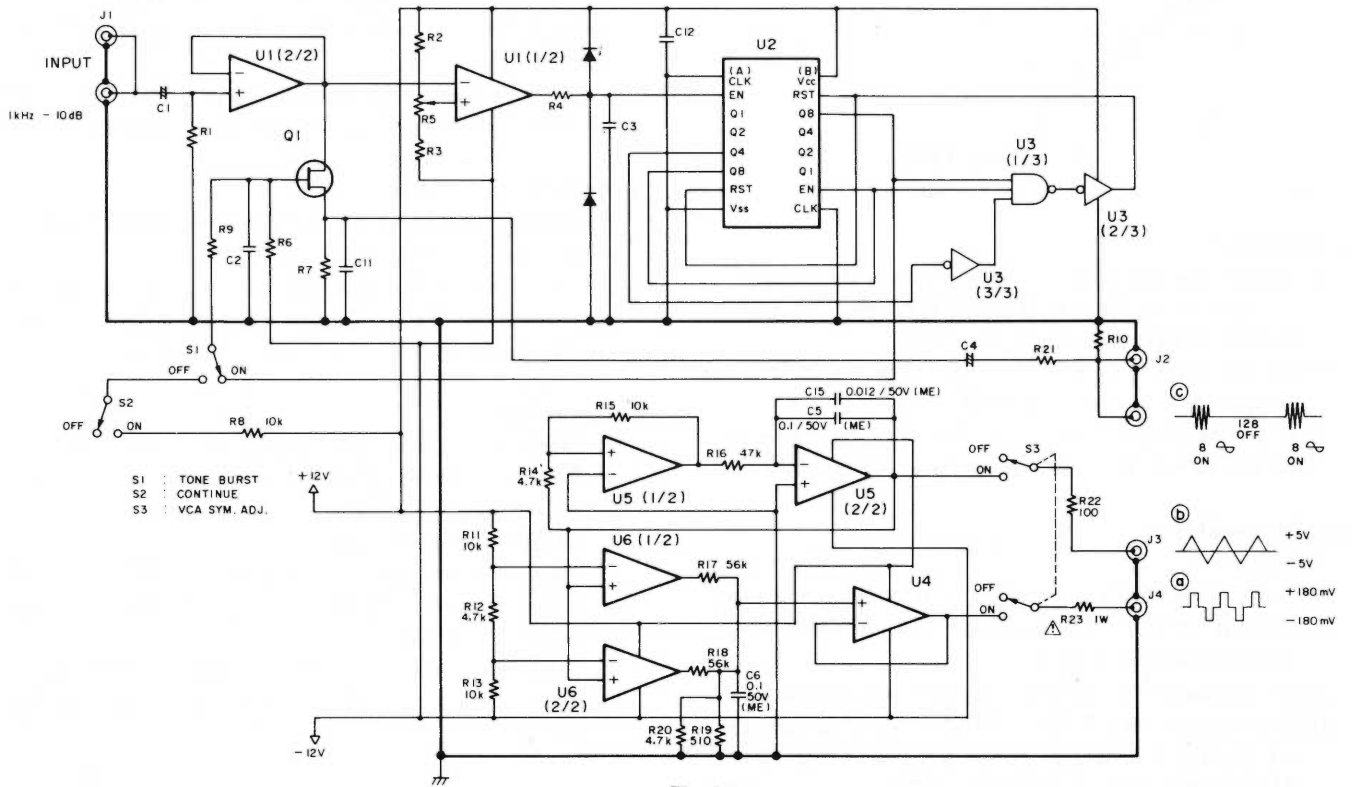


Fig. 4-6-8

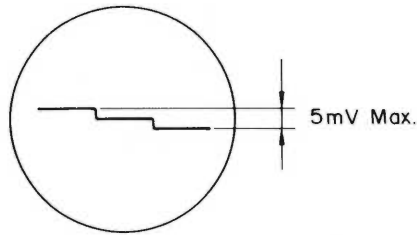


Fig. 4-6-9

3 Level

- 1) Apply signal of 1 kHz, -10dBV (0.3V) to PGM BUSS IN CH 1 (~ 4), then connect a level meter to TPE OUT 1 (~ 4).
- 2) Short-circuit both ends of resistor R516 (~ R546) or in-between of base and emitter (Refer to 4-6-1 (b)) of Q512 (~ Q542).
- 3) As in the item 1 RMS SYM, set the deck CH 1 (~ 4) at REC/ PAUSE mode using dbx IN.
- 4) Check TAPE OUT output is -10dBV (0.3V) ± 1. Adjust it with the half-fixed resistor R714 (~ R744) if necessary.

4 Frequency Response

- 1) Increase the input signal frequency up to 100 Hz turning the condition in the item 3 Level (1 kHz, -10dBV, INPUT). Check TAPE OUT 1 (~ 4) output at this time increases by 0.5dB ± 1 from that of 1 kHz. Furthermore check the output decreases by 3.2dB ± 1 from that of 1 kHz, when input signal frequency is turned to 10 kHz.

5 Noise Reduction Effect

- Decrease input signal level by 60dB from -10dBV under the item 3 Level condition.
- Check TAPE OUT 1 (~ 4) output at this time decreases by 30dB ± 1.
- Check also TAPE OUT output increases by 10dB ± 1 when input signal is increased by 20dB from -10dBV.

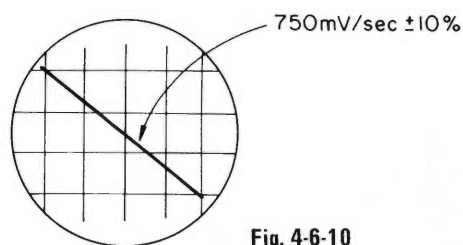


Fig. 4-6-10

6 Release Rate

- 1) Feed a tone burst signal \textcircled{C} (8 cycles on — 12 cycles off) as shown in Fig. 4-6-8 to the PGM BUSS IN 1 (\sim 4) and connect on oscilloscope to TP-13 (\sim TP-43).
- 2) Set the deck 1 (\sim 4) to REC PAUSE mode with the dbx IN as mentioned in the item RMS SYM.
- 3) Under the condition, make sure that a diagonal line on the scope is within 750mV/sec \pm 10% as shown in Fig. 4-6-10.

DECODE Amplifier

1 RMS SYM

- 1) Connect the oscilloscope between recording/reproducing amplifier TP-13 (\sim TP-43) and pin 3 of connector P002 (Refer to GND, Fig. 4-6-1 \textcircled{a}).
- 2) Set the deck at to reproducing pause mode using dbx IN.
- 3) Short-circuit resistor R175 (\sim R475) of recording/reproducing amplifier or in-between of base and emitter of Q118 (\sim Q418) to open pin 3 — 4 of U104 (\sim U404).
- 4) Connect a generator to TP-11 (\sim TP-41) and pin 3 of connector P002, then apply signal of 100 Hz, -10dBV (0.3V).
- 5) Check TP-13 (\sim TP-53) waveform outputs a sine wave of 200 Hz as shown in Fig. 4-6-7.

2 VCA SYM

- 1) Apply step wave signal \textcircled{a} from the circuit in Fig. 4-6-8 to TP-13 (\sim TP-43) terminal.
Then connect TP-11 (\sim TP-41) terminal to pin 3 of connector P002 before leading to the ground.
- 2) Connect TAPE OUT 1 (\sim 4) terminal to the "VER" side of the oscilloscope and sawtooth signal \textcircled{b} in Fig. 4-6-8 to the "HOR" side.
- 3) Set the deck at reproducing pause mode using dbx In.
- 4) Check waveform on the oscilloscope is less than 5mV (Refer to Fig. 4-6-9).

3 Level

- 1) Set the deck to reproducing pause mode using dbx IN.
- 2) Short-circuit resistor R175 (\sim R475) of the recording/reproducing amplifier or in-between of base and emitter of Q118 (\sim Q418) to open pin 3 — 4 of U104 (\sim U404).
- 3) Connect a generator to TP-11 (\sim TP-41) and pin 3 of connector P002, and apply signal of 1 kHz, -10dBV (0.3V). Then connect a level meter to TAPE OUT.
- 4) Check TAPE OUT 1 (\sim 4) output at this time is $-10\text{dBV} \pm 1$.

4 Frequency Response

Increase the input signal frequency up to 100 Hz turning the condition in the item 3 Level (1 kHz, -10dBV , INPUT).

Check TAPE OUT output at this time decreases by $0.72\text{dB} \pm 1$ from that of 1 kHz.

Furthermore check the output increases by $6.5\text{dB} \pm 1$ from that of 1 kHz, when input signal frequency is turned to 10 kHz.

5 Noise Reduction Effect

- 1) Decrease input signal level by 30dB from -10dBV under the condition of item 3 Level.

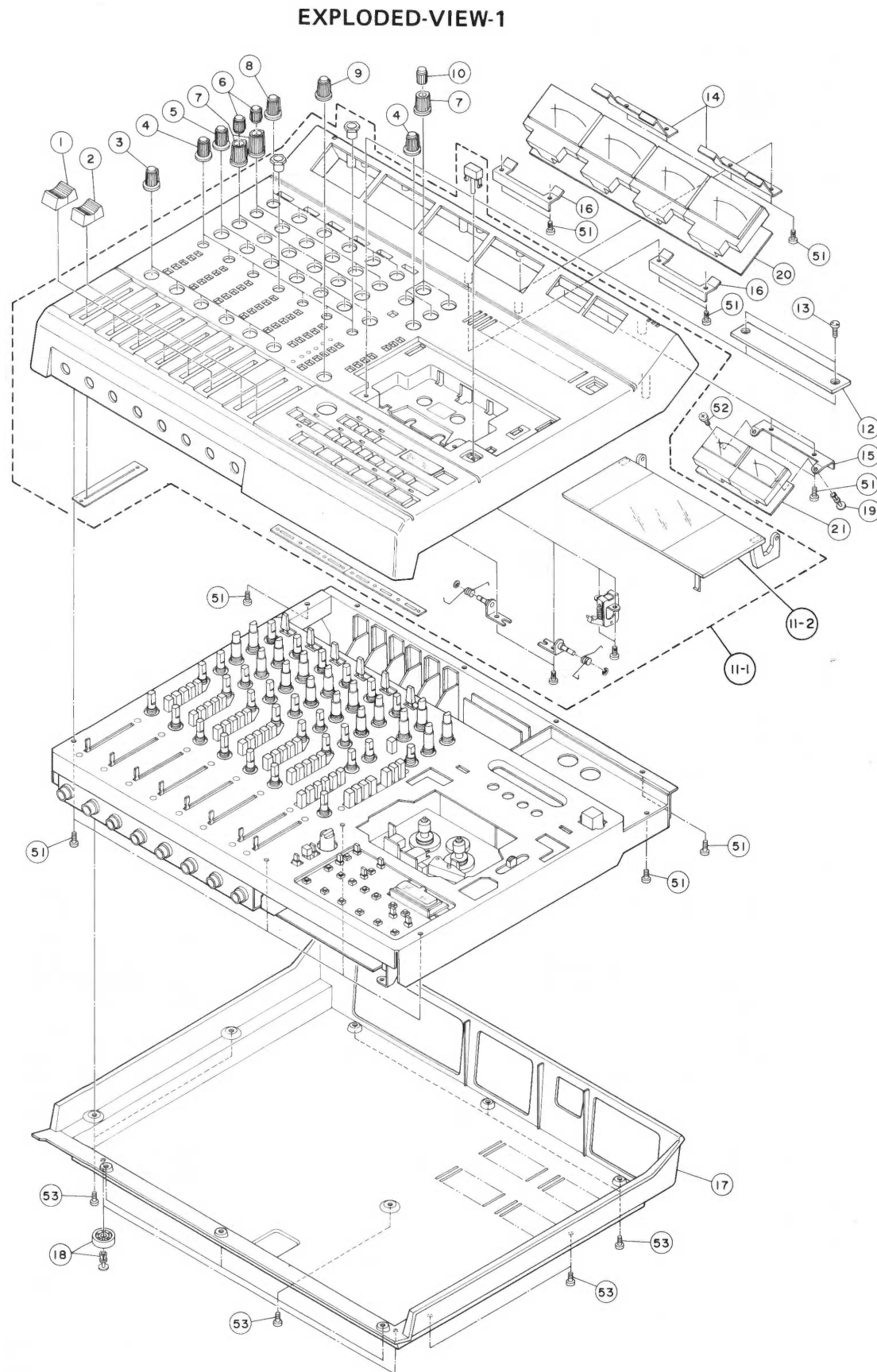
Check TAPE OUT output at this time decreases by $60\text{dB} \pm 1$.

Check also TAPE OUT output increases by $20\text{dB} \pm 1$ when input signal is increased by 10dB from -10dBV .

6 Release Rate

- 1) Set the deck to reproducing pause mode using dbx IN.
- 2) Short-circuit resistor R175 (\sim R475) of recording/reproducing amplifier or in-between of base and emitter of Q118 (\sim Q418) to open pin 4 — 3 of U104.
- 3) Apply tone burst signal \textcircled{C} in Fig. 4-6-8 to TP-11 (\sim TP-41) and pin 3 of connector P002, then connect the oscilloscope to TP-13 (\sim TP-43).
- 4) Check inclination of the waveform appearing on the oscilloscope at this time is 750 mV/sec \pm 10% as shown in Fig. 4-6-10.

5. EXPLODED VIEW AND PARTS LIST



EXPLODED VIEW-1

Parts marked with *require longer delivery time.

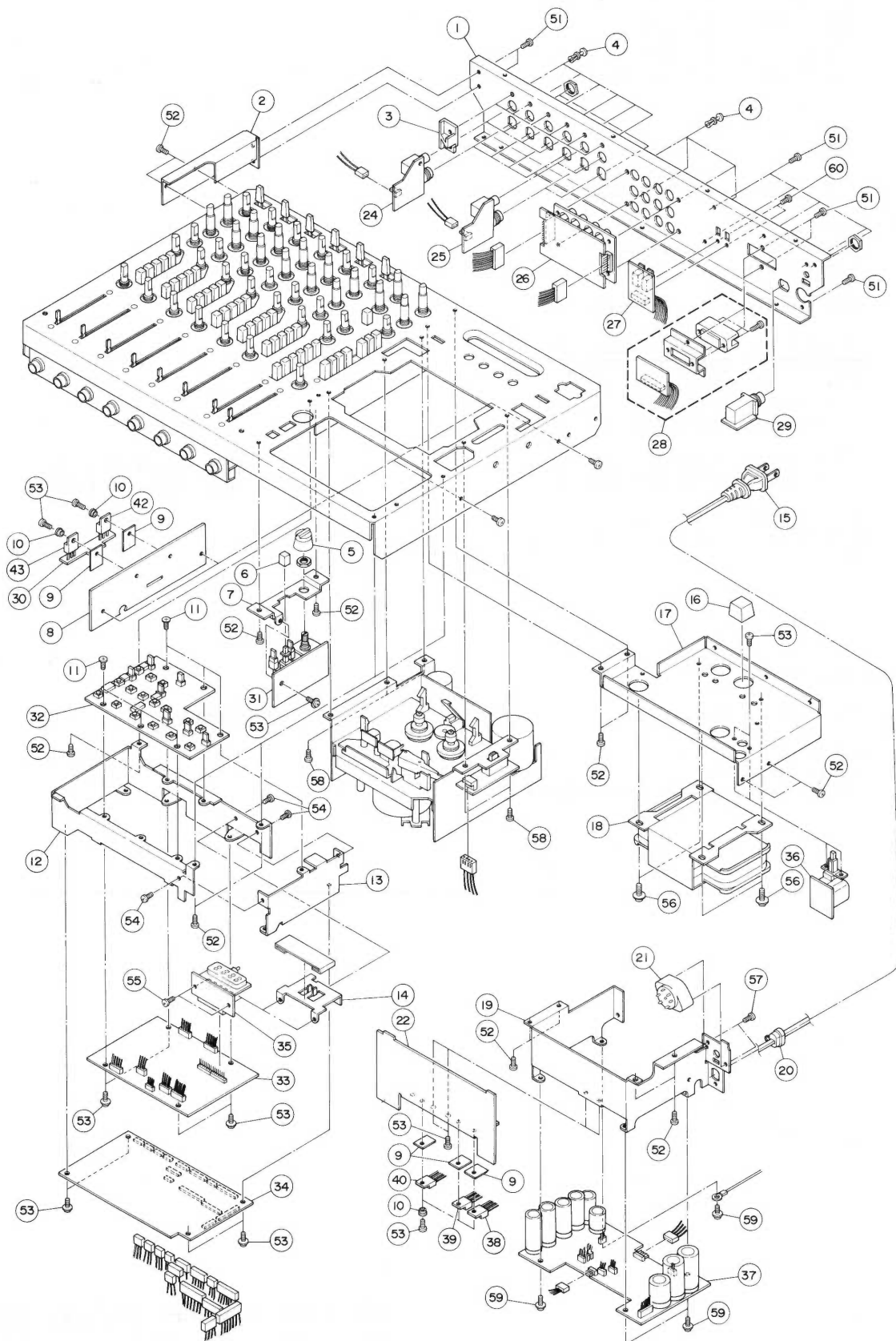
| REF.NO. | PARTS NO. | DESCRIPTION | REMARKS |
|---------|-------------|-----------------------|--------------------|
| 1- 1 | 5800715400 | KNOB, FADER (C) | |
| 1- 2 | 5800715500 | KNOB, FADER (M) | |
| 1- 3 | 5800756100 | KNOB ASSY A | |
| 1- 4 | 5800720500 | KNOB ASSY E | |
| 1- 5 | 5800720400 | KNOB ASSY D | |
| 1- 6 | 5800719700 | KNOB ASSY A | |
| 1- 7 | 5800720000 | KNOB B | |
| 1- 8 | 5800720200 | KNOB ASSY B | |
| 1- 9 | 5800756300 | KNOB ASSY C | |
| 1-10 | 5800719800 | KNOB ASSY B | |
| 1-11-1 | *5800692800 | CASE ASSY | |
| 1-11-2 | 5800692400 | COVER, CASSETTE | |
| 1-12 | *5800690600 | COVER, HEAD | |
| 1-13 | 5800724800 | SCREW, A | |
| 1-14 | *5800690900 | BRACKET, METER (A) | |
| 1-15 | *5800691000 | BRACKET, METER (B) | |
| 1-16 | *5800690100 | BRACKET, METER (C) | |
| 1-17 | *5800693000 | COVER, BOTTOM | |
| 1-18 | *5800304200 | FOOT (P4-8) | |
| 1-19 | *5534878000 | RIVET, PUSH B | |
| 1-20 | *5200168500 | METER PCB ASSY(A) | Ref. Pages 49 & 62 |
| 1-21 | *5200168600 | METER PCB ASSY(B) | Ref. Pages 50 & 63 |
| 1-52 | *5780003006 | SCREW, BIND M3X6 | |
| 1-53 | *5780023008 | SCREW, BIND M3X8 NI B | |

INCLUDED ACCESSORIES

| REF.NO. | PARTS NO. | DESCRIPTION | REMARKS |
|---------|-------------|---------------------------|---------|
| | *5700070400 | OWNER'S MANUAL [J] | |
| | *5700070400 | OWNER'S MANUAL [Except J] | |
| | *5700070600 | OWNER'S MANUAL [E,C] | |

[US]:U.S.A. [E]:EUROPE [UK]:U.K. [C]:CANADA
 [A]:AUSTRALIA [GE]:GENERAL EXPORT [J]:JAPAN

EXPLODED-VIEW-2



EXPLODED VIEW-2

Parts marked with *require longer delivery time.

| REF.NO. | PARTS NO. | DESCRIPTION | REMARKS |
|---------|--------------|--------------------------------------|--------------------|
| 2- 1 | *5800691901 | PANEL, REAR | |
| 2- 2 | *5800689900 | CHASSIS, SIDE | |
| 2- 3 | *5800690700 | HOLDER, JACK | |
| 2- 4 | *5534878000 | RIVET, PUSH B | |
| 2- 5 | 5800714800 | KNOB, PITCH CONTROL | |
| 2- 6 | 5800714700 | BUTTON, PUSH | |
| 2- 7 | *5800689600 | BRACKET, PITCH CONTROL | |
| 2- 8 | *5800731300 | HEAT SINK (B) | |
| 2- 9 | *5033291000 | PLATE, INSULATOR | |
| 2-10 | *5033295000 | TUBE, INSULATOR | |
| 2-11 | *5800400900 | SCREW, | |
| 2-12 | *5800691801 | BRACKET, CONTROL PCB (A) | |
| 2-13 | *5800691501 | BRACKET, CONTROL PCB (B) | |
| 2-14 | *5800689801 | BRACKET, COUNTER | |
| 2-15 | △ 5128027000 | CORD, AC [J] | |
| | △ 5350010700 | CORD, AC [C] | |
| | △ 5350010800 | CORD, AC [US, GE] | |
| | △ 5350008200 | CORD, AC [E] | |
| | △ 5128047000 | CORD, AC [UK] | |
| | △ 5350008300 | CORD, AC [A] | |
| 2-16 | 5800173100 | BUTTON, POWER | |
| 2-17 | *5800692100 | BRACKET, TRANSFORMER | |
| 2-18 | △ 5320035201 | TRANSFORMER, POWER [J] | |
| | △ 5320035301 | TRANSFORMER, POWER [U, C] | |
| | △ 5320035401 | TRANSFORMER, POWER [GE] | |
| | △ 5320035501 | TRANSFORMER, POWER [E, UK, A] | |
| 2-19 | *5800691700 | BRACKET, POWER PCB | |
| 2-20 | *5317001700 | BUSHING, CORD 4N-5 [C, UK] | |
| | *5534660000 | BUSHING, CORD 4N-4 [J, US, GE, E, A] | |
| 2-21 | △ 5302101700 | SW., VOLTAGE SELECT FS907G [GE] | |
| 2-22 | *5800691600 | HEAT SINK (A) | |
| 2-23 | *5800690200 | BRACKET, FUSE PCB | |
| 2-24 | *5200167400 | IN/OUT PCB ASSY(A)-1 | Ref. Pages 51 & 64 |
| 2-25 | *5200167410 | IN/OUT PCB ASSY(A)-2 | Ref. Pages 51 & 64 |
| 2-26 | *5200168100 | IN/OUT PCB ASSY(B) | Ref. Pages 51 & 64 |
| 2-27 | *5200168800 | DBX SW PCB ASSY | Ref. Pages 53 & 65 |
| 2-28 | *5200168900 | REMOTE PCB ASSY | Ref. Page 66 |
| 2-29 | *5200169000 | PCB ASSY, PUNCH IN/OUT | Ref. Page 66 |
| 2-30 | *5210180900 | TR PCB | |
| 2-31 | *5200169900 | PCB ASSY, PITCH CONTROL | Ref. Pages 53 & 65 |
| 2-32 | *5200169300 | OPE SW PCB ASSY | Ref. Pages 47 & 60 |
| 2-33 | *5200169200 | PCB ASSY, CONTROL (A) | Ref. Pages 48 & 61 |
| 2-34 | *5200170500 | PCB ASSY, CONTROL (B) | Ref. Pages 49 & 61 |
| 2-35 | *5200169400 | JOINT PCB ASSY | Ref. Page 66 |
| 2-36 | *5200170300 | PWR SW PCB ASSY [J] | Ref. Pages 52 & 64 |
| | *5200170310 | PWR SW PCB ASSY [US] | Ref. Pages 52 & 64 |
| | *5200170320 | PWR SW PCB ASSY [C] | Ref. Pages 52 & 64 |
| | *5200170330 | PWR SW PCB ASSY [GE] | Ref. Pages 52 & 64 |
| | *5200170340 | PWR SW PCB ASSY [E, UK, A] | Ref. Pages 52 & 64 |
| 2-37 | *5200170200 | P. SUPPLY PCB ASSY [J, US, C, GE] | Ref. Pages 51 & 63 |
| | *5200170210 | P. SUPPLY PCB ASSY [E, UK, A] | Ref. Pages 51 & 63 |
| 2-38 | △ 5145129000 | SI. TR. 2SB-507 (Q002) | |
| 2-39 | △ 5145087000 | SI. TR. 2SD-313E (Q001) | |
| 2-40 | △ 5220415100 | IC, NJM7805A (U003) | |

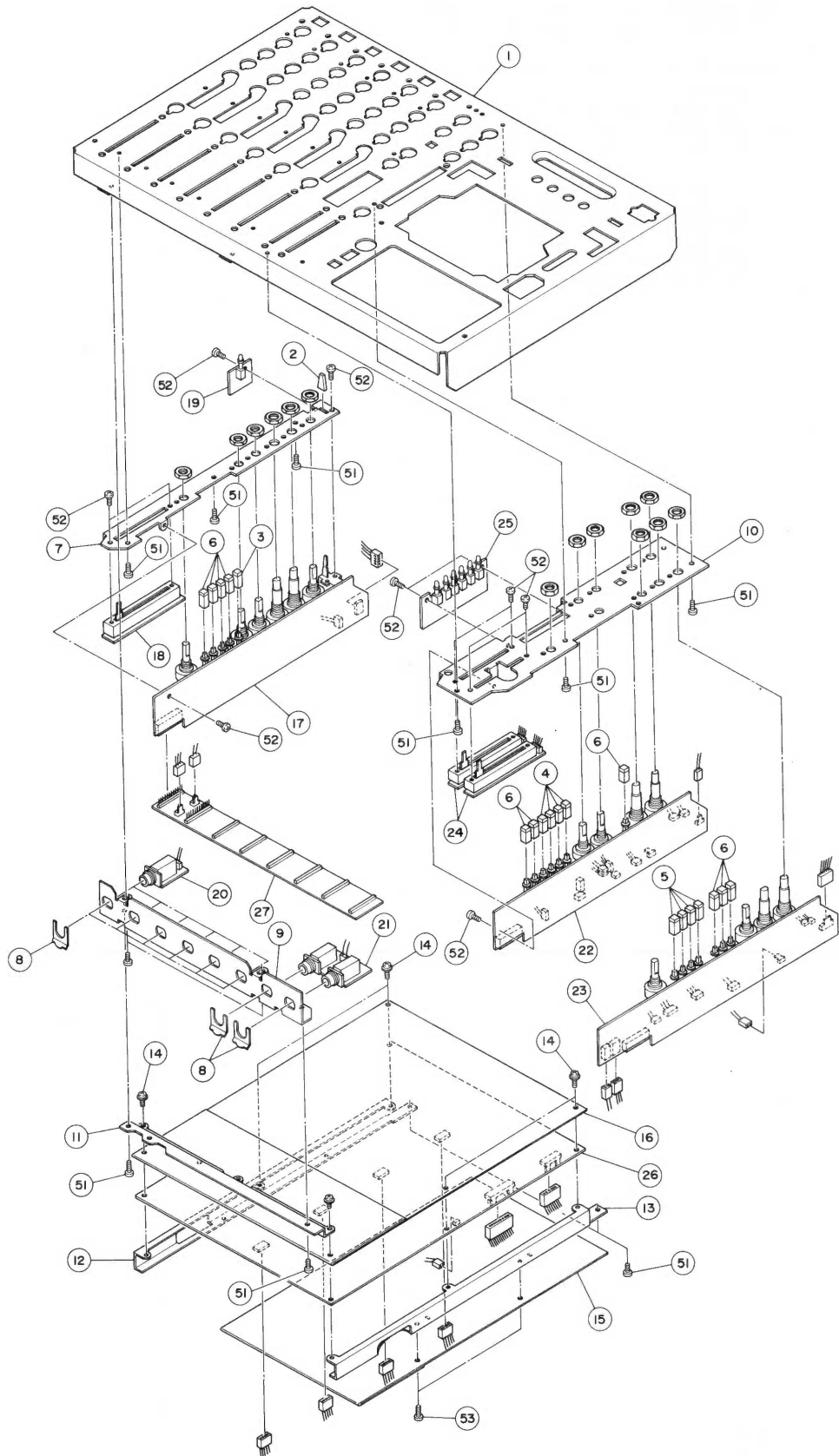
[US]:U.S.A. [E]:EUROPE [UK]:U.K. [C]:CANADA
 [A]:AUSTRALIA [GE]:GENERAL EXPORT [J]:JAPAN

EXPLODED VIEW-2

Parts marked with *require longer delivery time.

| REF.NO. | PARTS NO. | DESCRIPTION | REMARKS |
|---------|-------------|---------------------------|---------|
| 2-41 | Vacant | | |
| 2-42 | 5220420400 | IC,NJM79M12A (U002) | |
| 2-43 | 5220413000 | IC,NJM78M12A (U001) | |
| 2-51 | *5780023006 | SCREW, BIND M3X6 (BK NI) | |
| 2-52 | *5783003005 | SCREW, PAN S TITE M3X5 | |
| 2-53 | *5780003006 | SCREW,BIND M3X6 | |
| 2-54 | *5780103005 | SCREW, PAN M3X5 | |
| 2-55 | *5780002605 | SCREW, BIND M2.6X5 | |
| 2-56 | *5783074008 | SCREW,PAN CUP S TITE M4X8 | |
| 2-57 | *5784113008 | SCREW,BIND TAP M3X8 | |
| 2-58 | *5780003004 | SCREW, BIND M3X4 | |
| 2-59 | *5783103006 | SCREW M3X6 | |
| 2-60 | *5780022004 | SCREW, BIND M2X4 (BK NI) | |

EXPLODED-VIEW-3

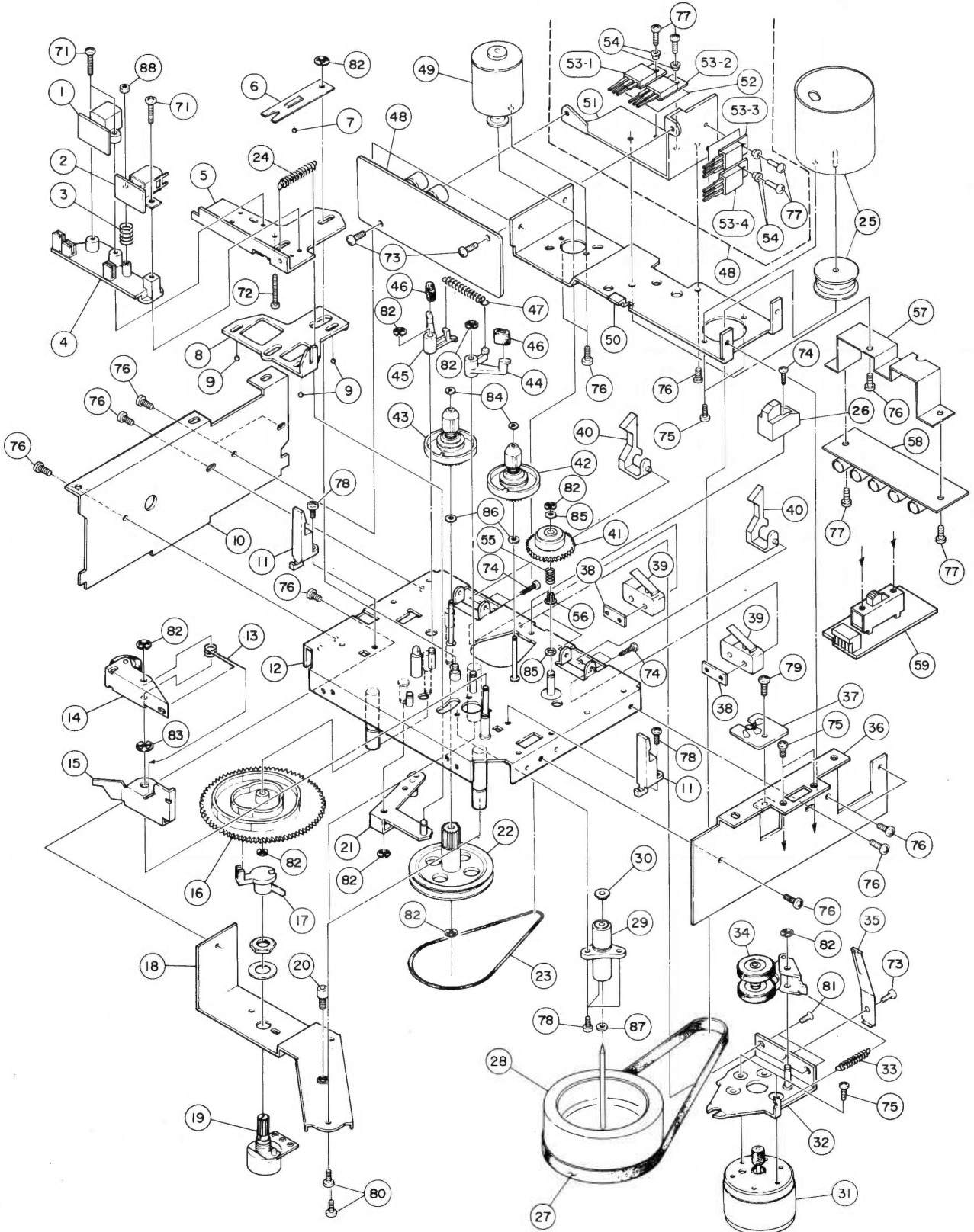


EXPLODED VIEW-3

Parts marked with *require longer delivery time.

| REF.NO. | PARTS NO. | DESCRIPTION | REMARKS |
|---------|-------------|----------------------|--------------------|
| 3- 1 | *5800692700 | CHASSIS, MAIN | |
| 3- 2 | 5800690800 | KNOB, LEVER | |
| 3- 3 | 5800541700 | KNOB, ASSIGN (B) | |
| 3- 4 | 5800541800 | KNOB, ASSIGN (C) | |
| 3- 5 | 5800541900 | KNOB, ASSIGN (D) | |
| 3- 6 | 5800542000 | KNOB, ASSIGN (E) | |
| 3- 7 | *5800691101 | BRACKET, INPUT PCB | |
| 3- 8 | *5317003200 | PLATE, MOUNT | |
| 3- 9 | *5800691400 | BRACKET, JACK | |
| 3-10 | *5800692000 | BRACKET, MONITOR PCB | |
| 3-11 | *5800691300 | BRACKET, RP PCB (C) | |
| 3-12 | *5800692200 | BRACKET, RP PCB (L) | |
| 3-13 | *5800692300 | BRACKET, RP PCB (R) | |
| 3-14 | *5783103008 | SCREW, M3X8 | |
| 3-15 | *5800758300 | PAPER, SHIELD | |
| 3-16 | *5800758200 | PLATE, SHIELD | |
| 3-17 | *5200167100 | INPUT AMP PCB ASSY | Ref. Pages 45 & 58 |
| 3-18 | *5200167500 | VR PCB ASSY(A) | Ref. Pages 52 & 64 |
| 3-19 | *5200167300 | LED PCB ASSY(A) | Ref. Pages 53 & 65 |
| 3-20 | *5200167200 | MIC JACK PCB ASSY | Ref. Pages 53 & 65 |
| 3-21 | *5200168300 | PHONE JACK PCB ASSY | Ref. Pages 52 & 64 |
| 3-22 | *5200167700 | MONITOR PCB ASSY(A) | Ref. Pages 45 & 59 |
| 3-23 | *5200167800 | MONITOR PCB ASSY(B) | Ref. Pages 45 & 60 |
| 3-24 | *5200167900 | VR PCB ASSY(B) | Ref. Pages 52 & 64 |
| 3-25 | *5200168200 | LED PCB ASSY(B) | Ref. Pages 53 & 65 |
| 3-26 | *5200170400 | R/P PCB ASSY | Ref. Pages 43 & 54 |
| 3-51 | *5783003005 | SCREW, PAN S TITE | M3X5 |
| 3-52 | *5780003006 | SCREW, BIND M3X6 | |
| 3-53 | *5783033006 | SCREW, BIND S TITE | M3X6 |

EXPLODED-VIEW-4



EXPLODED VIEW-4

Parts marked with *require longer delivery time.

| REF.NO. | PARTS NO. | DESCRIPTION | REMARKS |
|---------|-------------|-----------------------------|--------------------|
| 4-1 | 5378600900 | HEAD,ERASE 4CH | |
| 4-2 | 5378601200 | HEAD, R/P 4-4 | |
| 4-3 | 5800114700 | SPRING,HEAD ADJ | |
| 4-4 | 5800279203 | BRACKET, HEAD | |
| 4-5 | *5800472102 | BASE, HEAD | |
| 4-6 | *5800114900 | SPG.,BASE PLATE PRESSURE | |
| 4-7 | 5540055000 | STEEL BALL 20 | |
| 4-8 | *5800122802 | SLIDER | |
| 4-9 | 5540056000 | STEEL BALL 30 | |
| 4-10 | *5800689701 | BRACKET, MECHA (R) | |
| 4-11 | 5800274100 | GUIDE,CASSETTE | |
| 4-12 | *5800278601 | CHASSIS ASSY,MECHA. | |
| 4-13 | 5800276100 | SPG.,P.ROLLER | |
| 4-14 | 5800275700 | PINCH ROLLER ASSY | |
| 4-15 | *5800276201 | ARM, SPRING | |
| 4-16 | 5800122700 | CAM,CONTROL | |
| 4-17 | 5800116700 | JOINT | |
| 4-18 | *5800274700 | PLATE, THRUST | |
| 4-19 | 5282009600 | VR.,10KB | |
| 4-20 | 5534744000 | SCREW,THRUST | |
| 4-21 | *5800304400 | ARM ASSY,BASE | |
| 4-22 | 5800117200 | PULLEY,REDUCTION | |
| 4-23 | 5800275300 | BELT,CONTROL | |
| 4-24 | 5800304100 | SPRING,BASE ARM | |
| 4-25 | 5370006000 | MOTOR ASSY,DC CAP. VFB2RK | |
| 4-26 | *5800274200 | PLATE,STABILITY | |
| 4-27 | 5800275200 | BELT,CAPSTAN | |
| 4-28 | 5800238600 | CAPSTAN ASSY | |
| 4-29 | 5800106200 | HOUSING ASSY,CAPSTAN | |
| 4-30 | 5534130000 | OIL CAP | |
| 4-31 | 5370001200 | MOTOR,R,DC | |
| 4-32 | *5800121801 | BRACKET ASSY,R.MOTOR | |
| 4-33 | 5800115800 | SPG.,IDLER ARM | |
| 4-34 | 5800107801 | IDLER ASSY | |
| 4-35 | 5800274802 | SPG.,PRESSURE | |
| 4-36 | *5800691200 | BRACKET, MECHA (L) | |
| 4-37 | *5200169700 | SENSOR PCB ASSY | Ref. Pages 52 & 64 |
| 4-38 | *5554447000 | BRACKET, SWITCH | |
| 4-39 | 5301455300 | SW.,MICRO SS-5GL | |
| 4-40 | *5800117301 | ARM,SENSOR | |
| 4-41 | 5800304600 | GEAR ASSY,COUNTER | |
| 4-42 | 5800108701 | TABLE ASSY,REEL; R | |
| 4-43 | 5800107300 | REEL TABLE ASSY;L | |
| 4-44 | *5800131701 | ARM ASSY,BRAKE ARM;R | |
| 4-45 | *5800131601 | ARM ASSY,BRAKE ARM;L | |
| 4-46 | *5800126401 | SHOE,BRAKE | |
| 4-47 | 5800114800 | SPRING,BRAKE | |
| 4-48 | *5200169600 | DRIVE PCB ASSY | Ref. Pages 50 & 63 |
| 4-49 | 5370005100 | MOTOR,C. | |
| | 5800123300 | PULLEY,V | |
| 4-50 | *5800278702 | ADAPTOR | |
| 4-51 | *5581038000 | HARNESS CLIP A | |
| 4-52 | *5800323600 | PLATE ASSY DRIVER | |
| 4-53-1 | 5230781400 | TR 2SC3421(O) (Q501) (Q503) | |
| 4-53-2 | 5230019300 | TR 2SA1358(O) (Q502) (Q504) | |

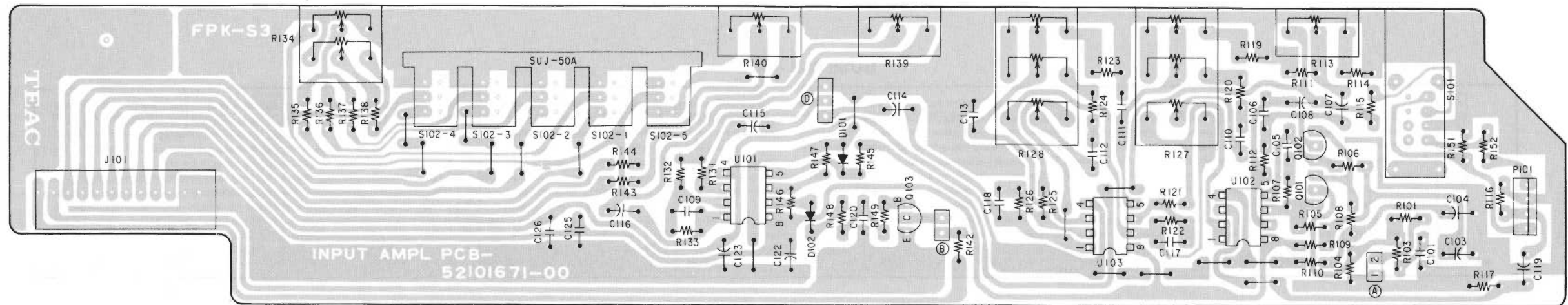
EXPLODED VIEW-4

Parts marked with *require longer delivery time.

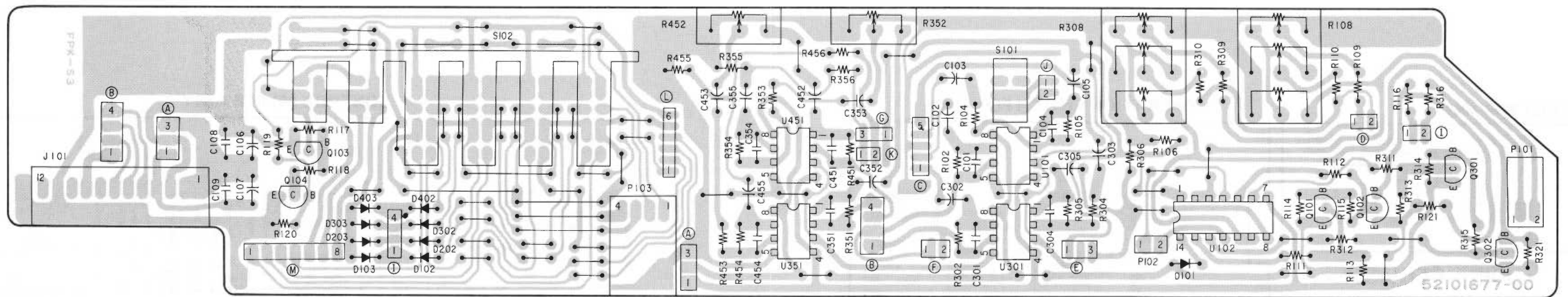
| REF.NO. | PARTS NO. | DESCRIPTION | REMARKS |
|---------|-------------|---------------------------------|--------------|
| 4-54 | *5033295000 | TUBE,INSULATOR | |
| 4-55 | 5800124300 | SPRING,TENTION | |
| 4-56 | *5800159100 | BRACKET, SPRING | |
| 4-57 | *5800690200 | BRACKET, FUSE PCB [E,UK,A] | |
| 4-58 | *5200079300 | FUSE PCB ASSY [E,UK,A] | Ref. Page 66 |
| 4-59 | *5200169800 | SPEED SW PCB ASSY | |
| 4-71 | *5780002016 | SCREW, BIND M2X16 | |
| 4-72 | *5780002020 | SCREW, BIND M2X20 | |
| 4-73 | *5783032605 | SCREW, BIND S TITE M2.6X5 | |
| 4-74 | *5783032606 | SCREW, BIND S TITE M2.6X6 | |
| 4-75 | *5780002603 | SCREW,BIND M2.6X3 | |
| 4-76 | *5783033006 | SCREW, BIND S TITE M3X6 | |
| 4-77 | *5780003006 | SCREW, BIND M3X6 | |
| 4-78 | *5783002606 | SCREW, PAN S TITE M2.6X6 | |
| 4-79 | *5783033005 | SCREW, BIND S TITE M3X5 | |
| 4-80 | *5783002605 | SCREW, S TITE M2.6X5 | |
| 4-81 | *5783042605 | SCREW,C.SUNK, S TITE 2.6X5 | |
| 4-82 | *5786002000 | RING, E-TYPE;2MM | |
| 4-83 | *5786003000 | RIIG, E-TYPE;3MM | |
| 4-84 | *5785331100 | WASHER,CUT-TYPE, 2 X 3.6 X 0.5T | |
| 4-85 | *5785303000 | WASHER,POLIS, 2X5.5X0.25T | |
| 4-86 | *5785301100 | WASHER, FLAT;1.5 X 4 X 0.25T | |
| 4-87 | *5785302200 | WASHER,POLIS, 2.6X5X0.25T | |
| 4-88 | *5781812000 | NUT,M2 | |

[US]:U.S.A. [E]:EUROPE [UK]:U.K. [C]:CANADA
[A]:AUSTRALIA [GE]:GENERAL EXPORT [J]:JAPAN

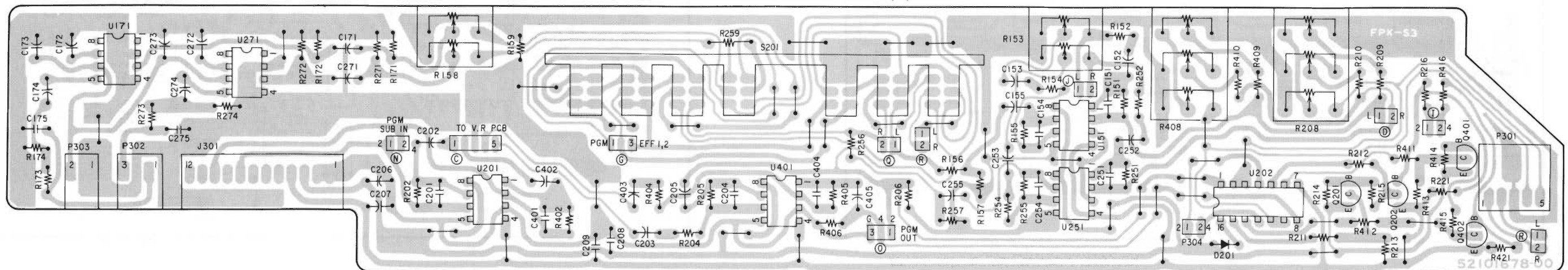
INPUT AMP PCB ASSY



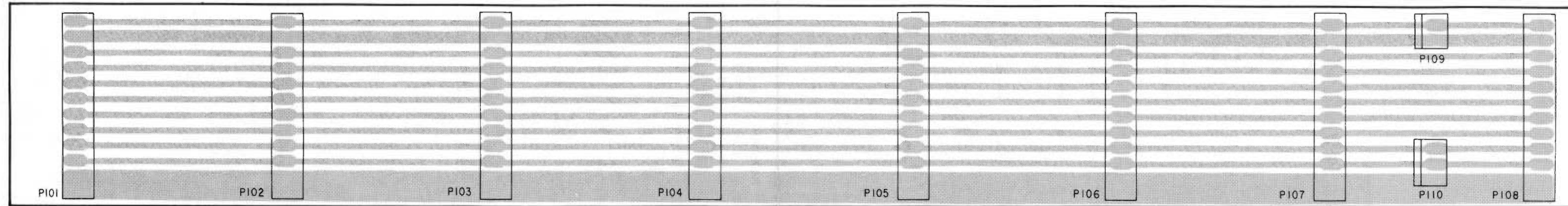
MONITOR PCB ASSY (A)



MONITOR PCB ASSY (B)



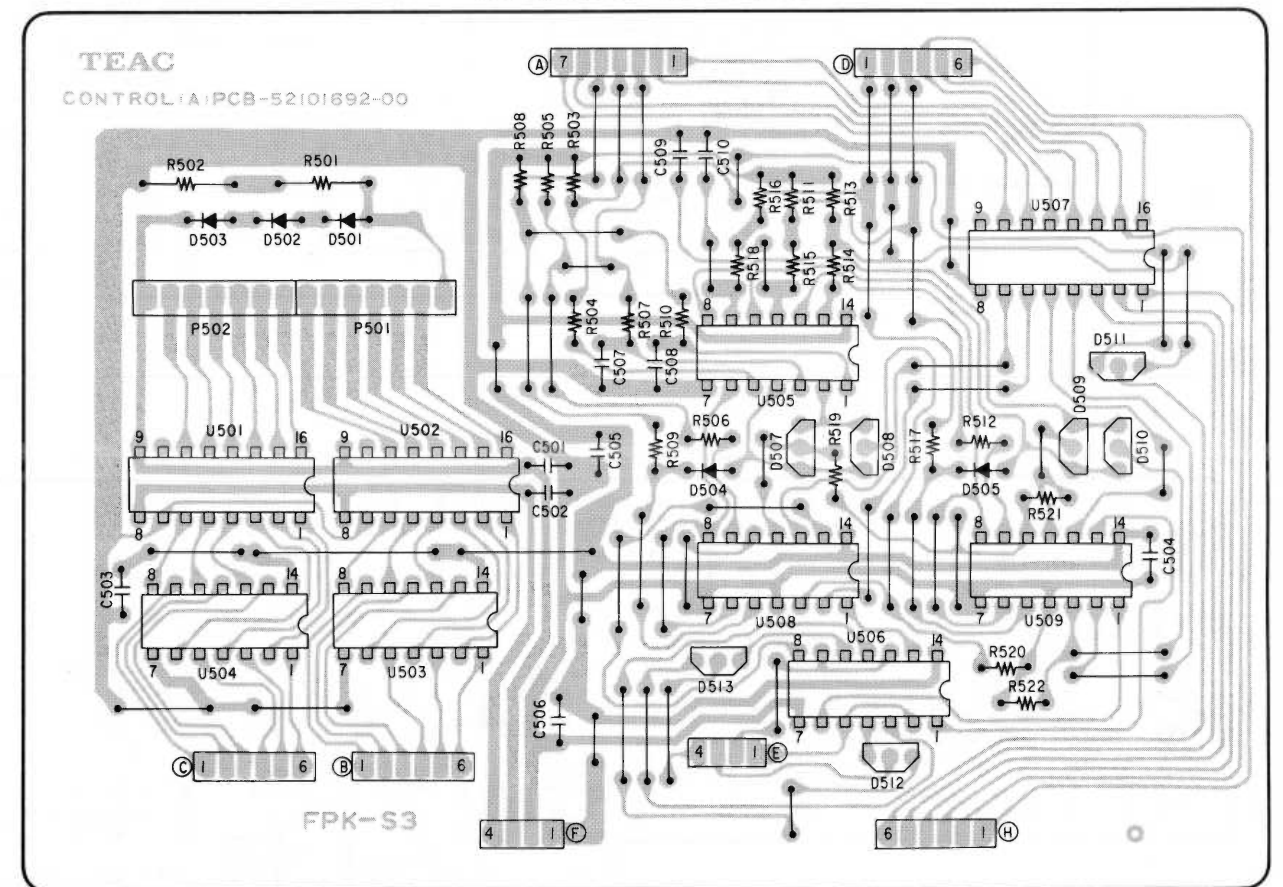
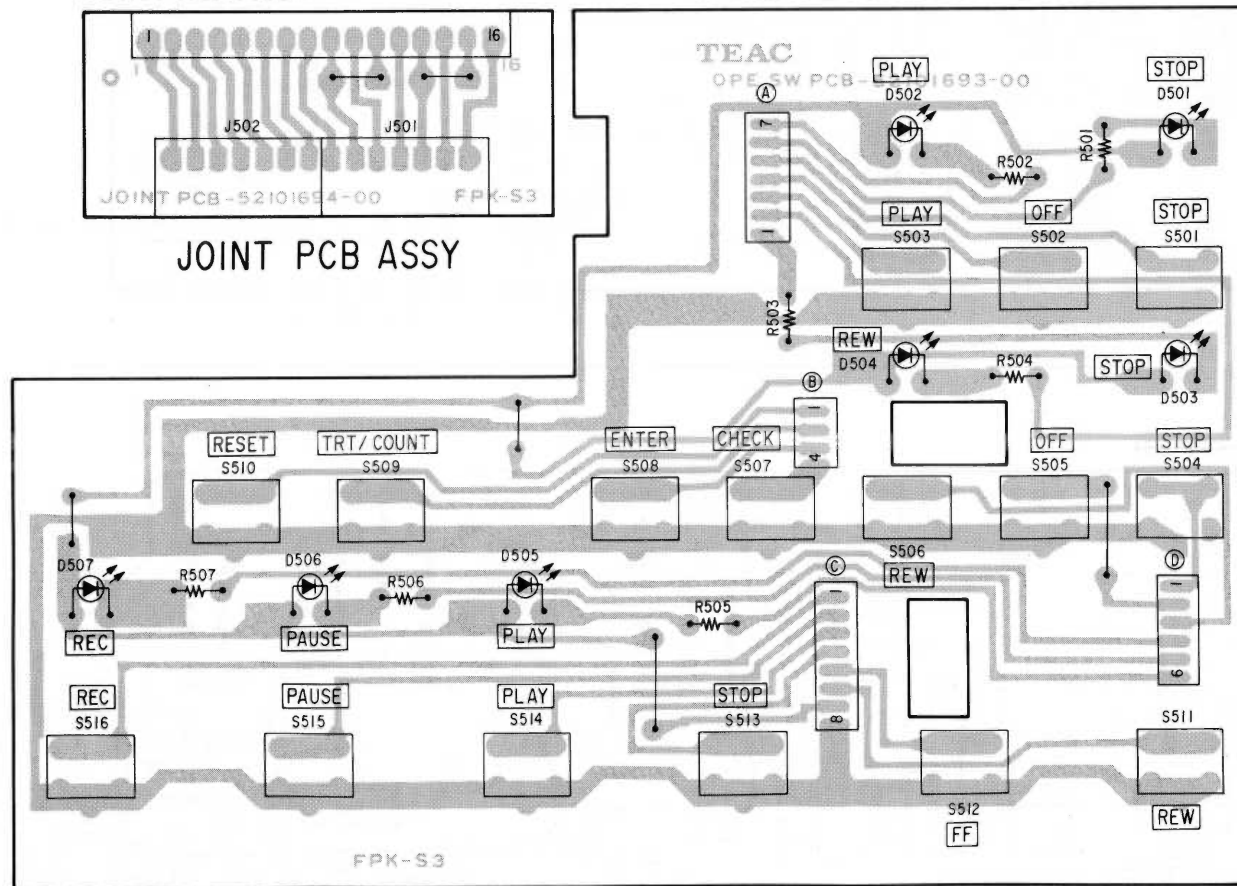
BUSS PCB ASSY



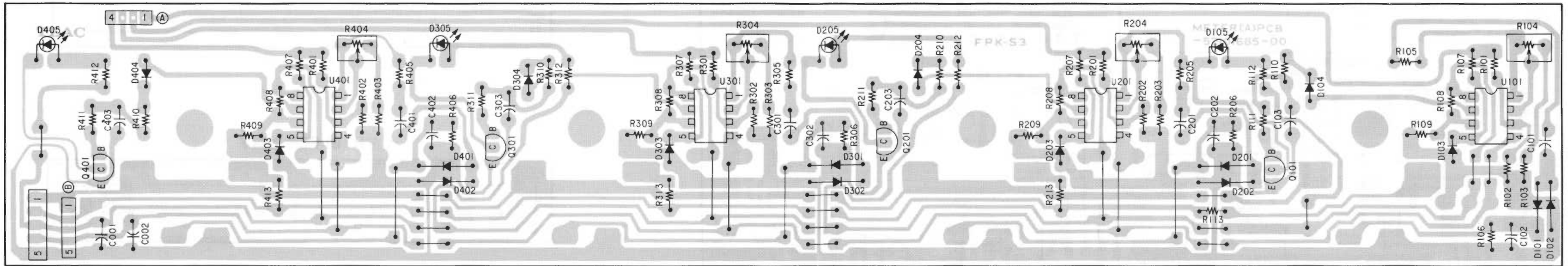
JOINT PCB ASSY

OPERATION SWITCH PCB ASSY

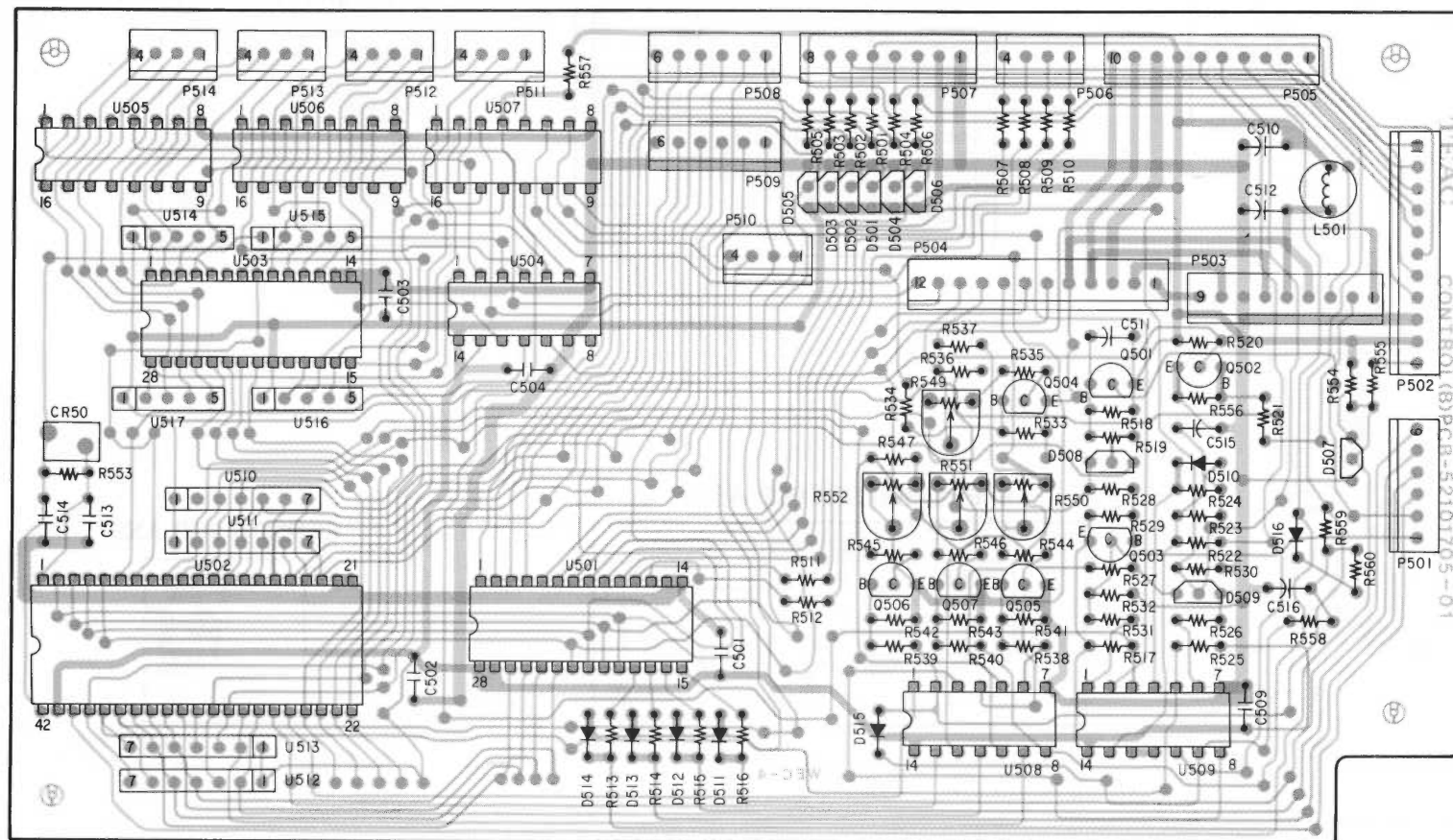
CONTROL (A) PCB ASSY



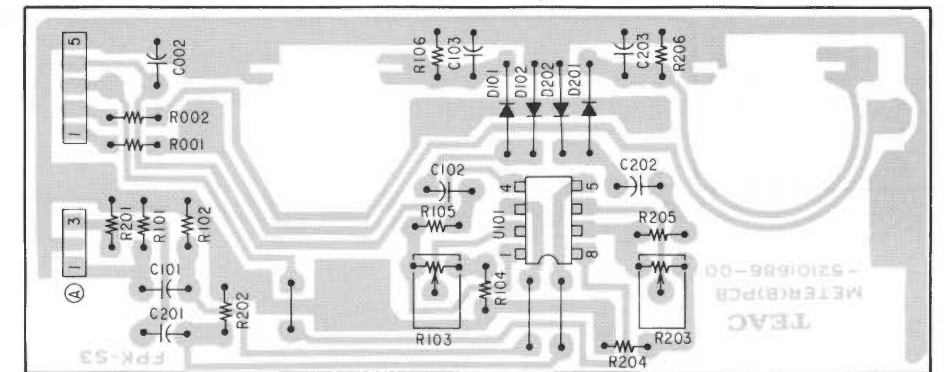
METER (A) PCB ASSY



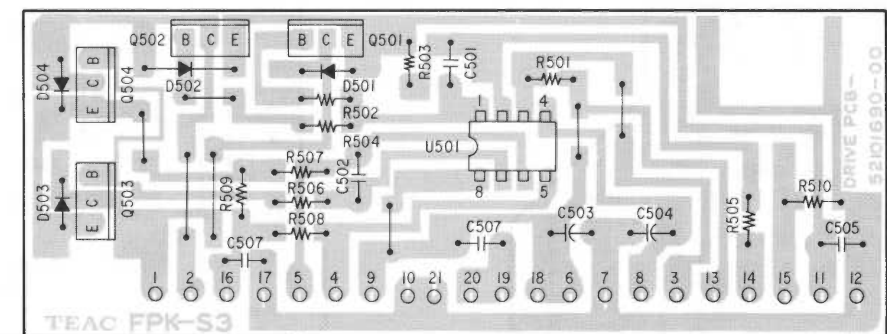
CONTROL (B) PCB ASSY



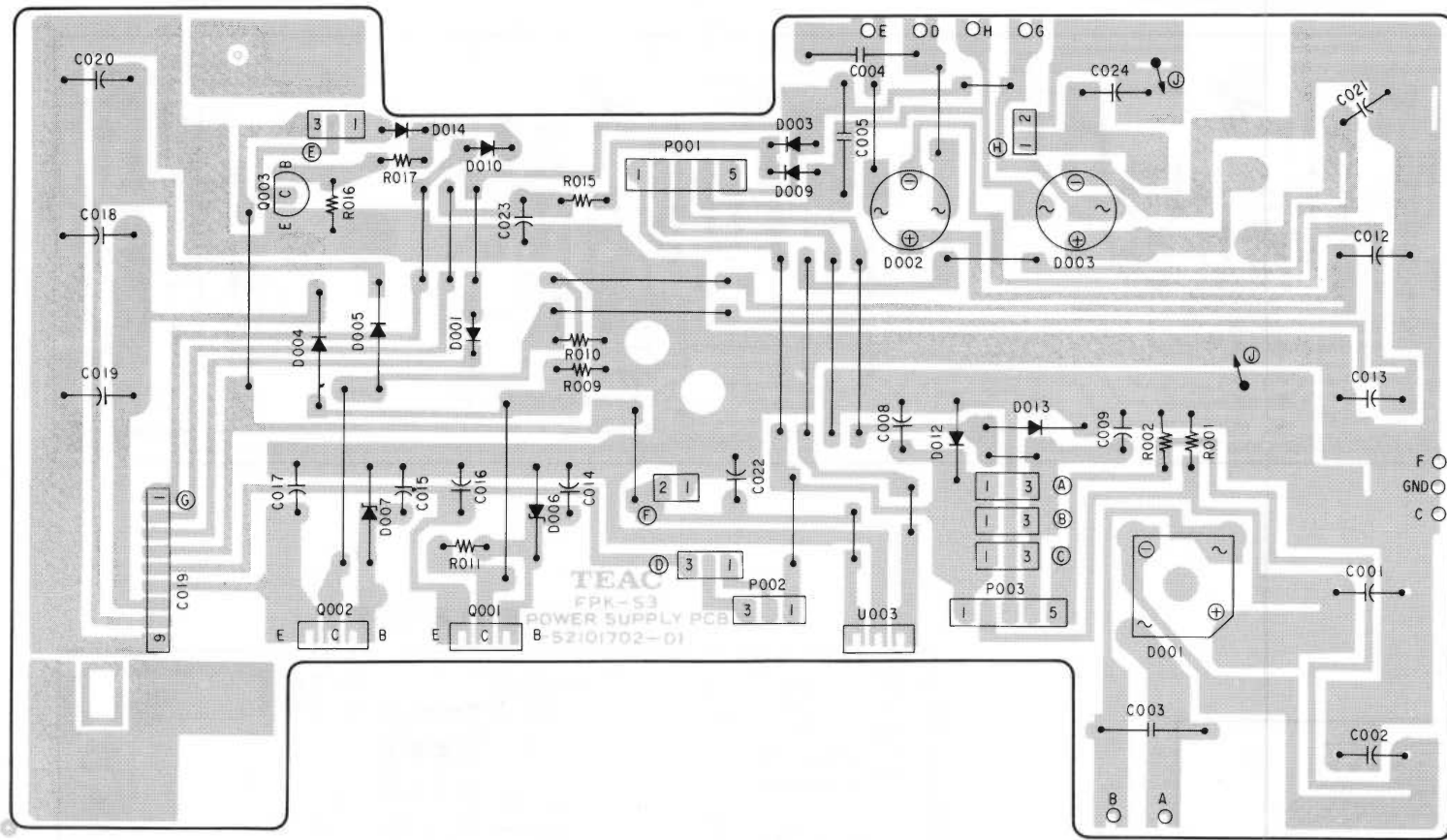
METER (B) PCB ASSY



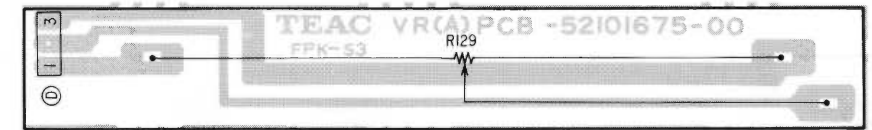
DRIVE PCB ASSY



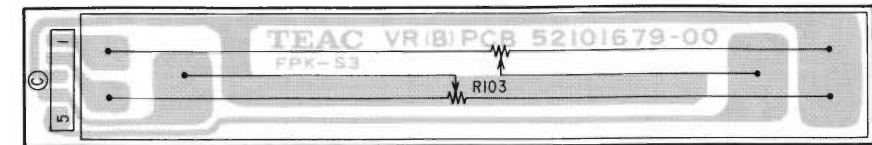
POWER SUPPLY PCB ASSY



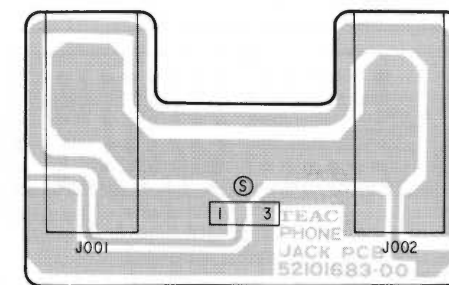
VR (A) PCB ASSY



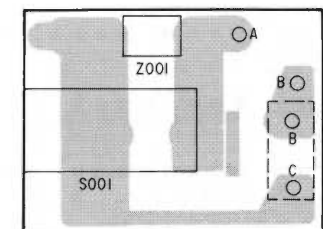
VR (B) PCB ASSY



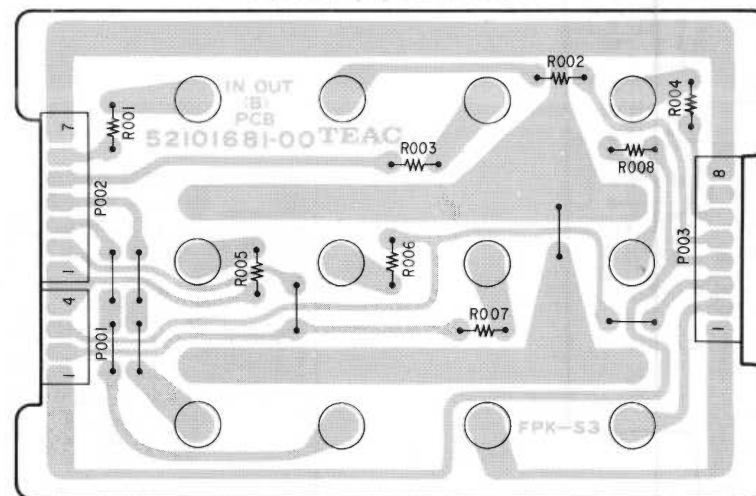
PHONE JACK PCB ASSY



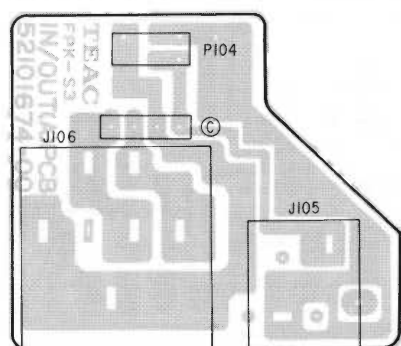
POWER SWITCH PCB ASSY



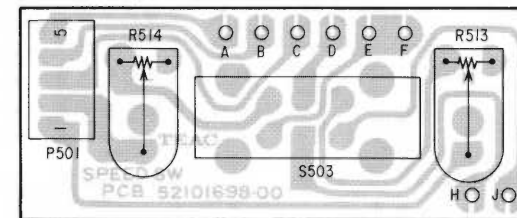
IN/OUT (B) PCB ASSY



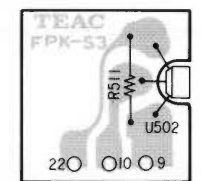
IN/OUT (A) PCB ASSY



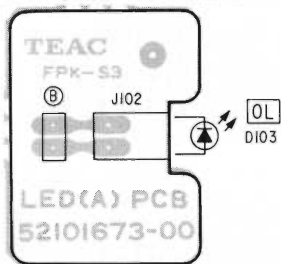
SPEED SWITCH PCB ASSY



SENSOR PCB ASSY



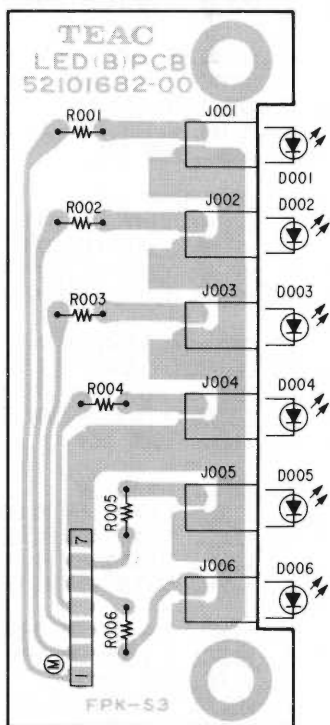
LED (A) PCB ASSY



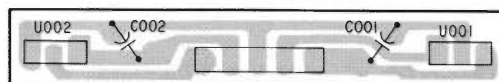
LED (C) PCB ASSY



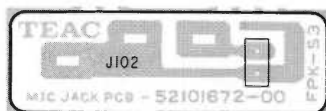
LED (B) PCB ASSY



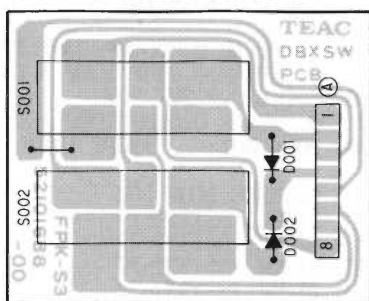
TR PCB ASSY



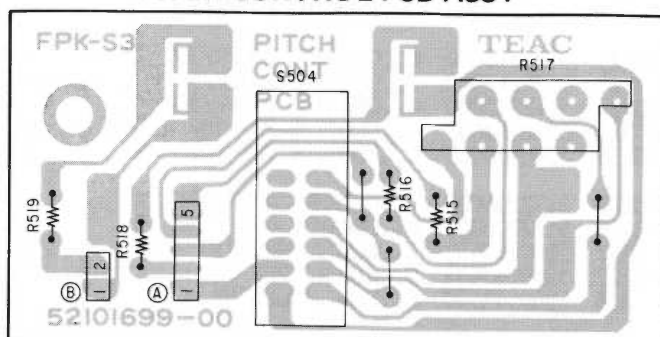
MIC JACK PCB ASSY



dbx SWITCH PCB ASSY



PITCH CONTROL PCB ASSY



R/P PCB ASSY

R/P PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|---------------------------|
| | *5200170400 | R/P PCB ASSY |
| | *5210170401 | R/P PCB |
| C001-C004 | 5260161150 | C.,ELEC.2.2UF 50V |
| C101 C201 | 5263106220 | POLYPRO. 220PF 100V J |
| C301 C401 | 5263106220 | POLYPRO. 220PF 100V J |
| C102 C202 | 5260166052 | C.,ELEC. 100UF/16V M USM |
| C302 C402 | 5260166052 | C.,ELEC. 100UF/16V M USM |
| C103 C203 | 5260166052 | C.,ELEC. 100UF/16V M USM |
| C303 C403 | 5260166052 | C.,ELEC. 100UF/16V M USM |
| C105 C205 | 5260165252 | C.,ELEC.47UF/25V M USM VT |
| C305 C405 | 5260165252 | C.,ELEC.47UF/25V M USM VT |
| C106 C206 | 5172204000 | C.,CERAMIC 22PF/50V T |
| C306 C406 | 5172204000 | C.,CERAMIC 22PF/50V T |
| C307 C407 | 5171868000 | C.,MYLAR 0.033UF 100V J T |
| C107 C207 | 5171868000 | C.,MYLAR 0.033UF 100V J T |
| C307 C407 | 5171868000 | C.,MYLAR 0.033UF 100V J T |
| C108 C208 | 5260162550 | C.,ELEC.10UF 16V |
| C308 C408 | 5260162550 | C.,ELEC.10UF 16V |
| C110 C210 | 5170374000 | C.,MYLAR 0.0082UF/100 JT |
| C310 C410 | 5170374000 | C.,MYLAR 0.0082UF/100 JT |
| C111 C211 | 5260162550 | C.,ELEC.10UF 16V |
| C311 C411 | 5260162550 | C.,ELEC.10UF 16V |
| C112 C212 | 5172204000 | C.,CERAMIC 22PF/50V T |
| C312 C412 | 5172204000 | C.,CERAMIC 22PF/50V T |
| C113 C213 | 5260163452 | C.,ELEC. 22UF 25V |
| C313 C413 | 5260163452 | C.,ELEC. 22UF 25V |
| C114 C214 | 5173433000 | C.,CERAMIC 0.010UF 50V Z |
| C314 C414 | 5173433000 | C.,CERAMIC 0.010UF 50V Z |
| C115 C215 | 5260160750 | C.,ELEC. 1UF50V SM T-N |
| C315 C415 | 5260160750 | C.,ELEC. 1UF50V SM T-N |
| C116 C216 | 5263167923 | C.,METAL 0.1UF/50V J VT |
| C316 C416 | 5263167923 | C.,METAL 0.1UF/50V J VT |
| C117 C217 | 5263167923 | C.,METAL 0.1UF/50V J VT |
| C317 C417 | 5263167923 | C.,METAL 0.1UF/50V J VT |
| C118 C218 | 5263169523 | C.,METAL 0.3UF 50V J VT |
| C318 C418 | 5263169523 | C.,METAL 0.3UF 50V J VT |
| C119 C219 | 5263106120 | POLYPRO. 200PF 100V J |
| C319 C419 | 5263106120 | POLYPRO. 200PF 100V J |
| C120 C220 | 5171856000 | C.,MYLAR 0.01UF/100V J T |
| C320 C420 | 5171856000 | C.,MYLAR 0.01UF/100V J T |
| C122 C222 | 5171856000 | C.,MYLAR 0.01UF/100V J T |
| C322 C422 | 5171856000 | C.,MYLAR 0.01UF/100V J T |
| C123 C223 | 5172212000 | C.,CERAMIC 100PF/50V T |
| C323 C423 | 5172212000 | C.,CERAMIC 100PF/50V T |
| C124 C224 | 5172212000 | C.,CERAMIC 100PF/50V T |
| C324 C424 | 5172212000 | C.,CERAMIC 100PF/50V T |
| C125 C325 | 5260162050 | C.,ELEC. 4.7UF 35V M SM |
| C325 C425 | 5260162050 | C.,ELEC. 4.7UF 35V M SM |
| C126 C226 | 5172208000 | C.,CERAMIC 47PF/50V T |
| C326 C426 | 5172208000 | C.,CERAMIC 47PF/50V T |
| C127 C227 | 5260163452 | C.,ELEC. 22UF 25V |
| C327 C427 | 5260163452 | C.,ELEC. 22UF 25V |
| C128 C228 | 5260162550 | C.,ELEC.10UF 16V |

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|------------|---------------------------|
| C328 C428 | 5260162550 | C.,ELEC.10UF 16V |
| C129 C229 | 5260227010 | C.,ELEC. 10UF35V K LL VF |
| C329 C429 | 5260227010 | C.,ELEC. 10UF35V K LL VF |
| C130 C230 | 5260160750 | C.,ELEC. 1UF50V SM T-N |
| C330 C430 | 5260160750 | C.,ELEC. 1UF50V SM T-N |
| C131 C231 | 5171856000 | C.,MYLAR 0.01UF/100V J T |
| C331 C431 | 5171856000 | C.,MYLAR 0.01UF/100V J T |
| C132 C232 | 5263167923 | C.,METAL 0.1UF/50V J VT |
| C332 C432 | 5263167923 | C.,METAL 0.1UF/50V J VT |
| C133 C233 | 5172218000 | C.,CERAMIC 330PF/50V T |
| C333 C433 | 5172218000 | C.,CERAMIC 330PF/50V T |
| C134 C234 | 5170364000 | C.,MYLAR 0.0033UF/100V JT |
| C334 C434 | 5170364000 | C.,MYLAR 0.0033UF/100V JT |
| C135 C235 | 5170364000 | C.,MYLAR 0.0033UF/100V JT |
| C335 C435 | 5170364000 | C.,MYLAR 0.0033UF/100V JT |
| C136 C236 | 5263167923 | C.,METAL 0.1UF/50V J VT |
| C336 C436 | 5263167923 | C.,METAL 0.1UF/50V J VT |
| C137 C237 | 5263167923 | C.,METAL 0.1UF/50V J VT |
| C337 C437 | 5263167923 | C.,METAL 0.1UF/50V J VT |
| C139 C239 | 5260162550 | C.,ELEC.10UF 16V |
| C339 C439 | 5260162550 | C.,ELEC.10UF 16V |
| C140 C240 | 5170370000 | C.,MYLAR 0.0056UF/100V JT |
| C340 C440 | 5170370000 | C.,MYLAR 0.0056UF/100V JT |
| C142 C242 | 5171858000 | C.,MYLAR 0.012UF/100V J T |
| C342 C442 | 5171858000 | C.,MYLAR 0.012UF/100V J T |
| C143 C243 | 5172218000 | C.,CERAMIC 330PF/50V T |
| C343 C443 | 5172218000 | C.,CERAMIC 330PF/50V T |
| C144 C244 | 5263168023 | C.,METAL 0.12UF 50V J |
| C344 C444 | 5263168023 | C.,METAL 0.12UF 50V J |
| C145 C245 | 5260067050 | C.,ELEC. 10UF 16V |
| C345 C445 | 5260067050 | C.,ELEC. 10UF 16V |
| C146 C246 | 5260166052 | C.,ELEC. 100UF/16V M USM |
| C346 C446 | 5260166052 | C.,ELEC. 100UF/16V M USM |
| C147 C247 | 5260166052 | C.,ELEC. 100UF/16V M USM |
| C347 C447 | 5260166052 | C.,ELEC. 100UF/16V M USM |
| C510 C520 | 5260160750 | C.,ELEC. 1UF50V SM T-N |
| C530 C540 | 5260160750 | C.,ELEC. 1UF50V SM T-N |
| C610 C620 | 5260162550 | C.,ELEC.10UF 16V |
| C611 C621 | 5170372000 | C.,MYLAR 0.0068UF/100V JT |
| C612 C622 | 5171856000 | C.,MYLAR 0.01UF/100V J T |
| C613 C623 | 5260161150 | C.,ELEC.2.2UF 50V |
| C614 C624 | 5171856000 | C.,MYLAR 0.01UF/100V J T |
| C615 C625 | 5263106620 | POLYPRO. 330PF 100V J |
| C616 C626 | 5260162550 | C.,ELEC.10UF 16V |
| C630 C640 | 5260162550 | C.,ELEC.10UF 16V |
| C631 C641 | 5170372000 | C.,MYLAR 0.0068UF/100V JT |
| C632 C642 | 5171856000 | C.,MYLAR 0.01UF/100V J T |
| C633 C643 | 5260161150 | C.,ELEC.2.2UF 50V |
| C634 C644 | 5171856000 | C.,MYLAR 0.01UF/100V J T |
| C635 C645 | 5263106620 | POLYPRO. 330PF 100V J |
| C636 C646 | 5260162550 | C.,ELEC.10UF 16V |
| D101 D201 | 5224015020 | DIODE,1SS133T-77 |
| D301 D401 | 5224015020 | DIODE,1SS133T-77 |
| D103 D203 | 5224015020 | DIODE,1SS133T-77 |
| D303 D403 | 5224015020 | DIODE,1SS133T-77 |

Parts marked with *require longer delivery time.

R/P PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|------------|-------------------------|
| D104 D204 | 5224015100 | DIODE,MC911 |
| D304 D404 | 5224015100 | DIODE,MC911 |
| D610 D620 | 5224015020 | DIODE,1SS133T-77 |
| D630 D640 | 5224015020 | DIODE,1SS133T-77 |
| K101 K201 | 5290011500 | RELAY,G5A-237P DC12V |
| K301 K401 | 5290011500 | RELAY,G5A-237P DC12V |
| L001 L002 | 5286002100 | COIL,CHOKE 1.5MH |
| L101 L201 | 5286023100 | COIL,TRAP 85KHZ |
| L301 L401 | 5286023100 | COIL,TRAP 85KHZ |
| L102 L202 | 5292804900 | FILTER,MPX |
| L302 L402 | 5292804900 | FILTER,MPX |
| L103 L203 | 5286023100 | COIL,TRAP 85KHZ |
| L303 L403 | 5286023100 | COIL,TRAP 85KHZ |
| L104 L204 | 5286010200 | COIL,CHOKE 36MH |
| L304 L404 | 5286010200 | COIL,CHOKE 36MH |
| P001 | 5336126800 | CON.PLUG 8263-0812 WHT |
| P002 | 5336127200 | CON.PLUG 8263-1212 WHT |
| P003 | 5336128200 | CON.,PLUG 8263-0211 WHT |
| P101 P201 | 5336126500 | CON.PLUG 8263-0512 WHT |
| P301 P401 | 5336126500 | CON.PLUG 8263-0512 WHT |
| Q101 Q201 | 5145103000 | FET,2SK-68A-M |
| Q301 Q401 | 5145103000 | FET,2SK-68A-M |
| Q102 Q202 | 5145103000 | FET,2SK-68A-M |
| Q302 Q402 | 5145103000 | FET,2SK-68A-M |
| Q103 Q203 | 5145103000 | FET,2SK-68A-M |
| Q303 Q403 | 5145103000 | FET,2SK-68A-M |
| Q106 Q206 | 5232007300 | FET,2SK-364V |
| Q306 Q406 | 5232007300 | FET,2SK-364V |
| Q107 Q207 | 5230775020 | TR 2SC2878-B |
| Q307 Q407 | 5230775020 | TR 2SC2878-B |
| Q108 Q208 | 5230775020 | TR 2SC2878-B |
| Q308 Q408 | 5230775020 | TR 2SC2878-B |
| Q109 Q209 | 5230775020 | TR 2SC2878-B |
| Q309 Q409 | 5230775020 | TR 2SC2878-B |
| Q110 Q210 | 5230775020 | TR 2SC2878-B |
| Q310 Q410 | 5230775020 | TR 2SC2878-B |
| Q111 Q211 | 5230775020 | TR 2SC2878-B |
| Q311 Q411 | 5230775020 | TR 2SC2878-B |
| Q112 Q212 | 5230775020 | TR 2SC2878-B |
| Q312 Q412 | 5230775020 | TR 2SC2878-B |
| Q113 Q213 | 5230775020 | TR 2SC2878-B |
| Q313 Q413 | 5230775020 | TR 2SC2878-B |
| Q114 Q214 | 5230775020 | TR 2SC2878-B |
| Q314 Q414 | 5230775020 | TR 2SC2878-B |
| Q115 Q215 | 5230775020 | TR 2SC2878-B |
| Q315 Q415 | 5230775020 | TR 2SC2878-B |
| Q116 Q216 | 5230780920 | SI.TR.2SC2603F |
| Q316 Q416 | 5230780920 | SI.TR.2SC2603F |
| Q117 Q217 | 5230018920 | SI.TR.2SA1115F |
| Q317 Q417 | 5230018920 | SI.TR.2SA1115F |
| Q118 Q218 | 5230018920 | SI.TR.2SA1115F |
| Q318 Q418 | 5230018920 | SI.TR.2SA1115F |
| Q119 Q219 | 5230775020 | TR 2SC2878-B |

R/P PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|------------|---------------------------|
| Q319 Q419 | 5230775020 | TR 2SC2878-B |
| Q120 Q220 | 5230780920 | SI.TR.2SC2603F |
| Q320 Q420 | 5230780920 | SI.TR.2SC2603F |
| Q121 Q221 | 5230780920 | SI.TR.2SC2603F |
| Q321 Q421 | 5230780920 | SI.TR.2SC2603F |
| Q122 Q222 | 5230780920 | SI.TR.2SC2603F |
| Q322 Q422 | 5230780920 | SI.TR.2SC2603F |
| Q123 Q223 | 5230775020 | TR 2SC2878-B |
| Q323 Q423 | 5230775020 | TR 2SC2878-B |
| Q510 Q520 | 5230018920 | SI.TR.2SA1115F |
| Q511 Q521 | 5230018920 | SI.TR.2SA1115F |
| Q512 Q522 | 5230018920 | SI.TR.2SA1115F |
| Q513 Q523 | 5230018920 | SI.TR.2SA1115F |
| Q530 Q540 | 5230018920 | SI.TR.2SA1115F |
| Q531 Q541 | 5230018920 | SI.TR.2SA1115F |
| Q532 Q542 | 5230018920 | SI.TR.2SA1115F |
| Q533 Q543 | 5230018920 | SI.TR.2SA1115F |
| Q610 Q620 | 5230780920 | SI.TR.2SC2603F |
| Q611 Q621 | 5230018920 | SI.TR.2SA1115F |
| Q612 Q622 | 5230779520 | SI.TR.2SC1815GR |
| Q613 Q623 | 5230779720 | SI.TR.2SC945A KA |
| Q614 Q624 | 5230779720 | SI.TR.2SC945A KA |
| Q630 Q640 | 5230780920 | SI.TR.2SC2603F |
| Q631 Q641 | 5230018920 | SI.TR.2SA1115F |
| Q632 Q642 | 5230779520 | SI.TR.2SC1815GR |
| Q633 Q643 | 5230779720 | SI.TR.2SC945A KA |
| Q634 Q644 | 5230779720 | SI.TR.2SC945A KA |
| R001-R006 | 5240029820 | R.,CARBON R20 4.7K J |
| R101 R201 | 5240025820 | R.,CARBON R20 100 J |
| R301 R401 | 5240025820 | R.,CARBON R20 100 J |
| R102 R202 | 5240032620 | R.,CARBON R20 68K J |
| R302 R402 | 5240032620 | R.,CARBON R20 68K J |
| R103 R203 | 5240029820 | R.,CARBON R20 4.7K J |
| R303 R403 | 5240029820 | R.,CARBON R20 4.7K J |
| R104 R204 | 5240029820 | R.,CARBON R20 4.7K J |
| R304 R404 | 5240029820 | R.,CARBON R20 4.7K J |
| R105 R205 | 5240030420 | R.,CARBON R20 8.2K J |
| R305 R405 | 5240030420 | R.,CARBON R20 8.2K J |
| R106 R206 | 5183594000 | R.,INCONBUSTIBLE 470 1/4W |
| R306 R406 | 5183594000 | R.,INCONBUSTIBLE 470 1/4W |
| R107 R207 | 5183594000 | R.,INCONBUSTIBLE 470 1/4W |
| R307 R407 | 5183594000 | R.,INCONBUSTIBLE 470 1/4W |
| R108 R208 | 5240026020 | R.,CARBON R20 120 J |
| R308 R408 | 5240026020 | R.,CARBON R20 120 J |
| R109 R209 | 5240032920 | R.,CARBON R20 91K J |
| R309 R409 | 5240032920 | R.,CARBON R20 91K J |
| R110 R210 | 5240029120 | R.,CARBON R20 2.4K J |
| R310 R410 | 5240029120 | R.,CARBON R20 2.4K J |
| R111 R211 | 5240029120 | R.,CARBON R20 2.4K J |
| R311 R411 | 5240029120 | R.,CARBON R20 2.4K J |
| R112 R212 | 5240177800 | R.,CARBON ELR25 10M J |
| R312 R412 | 5240177800 | R.,CARBON ELR25 10M J |
| R113 R213 | 5240033220 | R.,CARBON R10 120K |
| R313 R413 | 5240033220 | R.,CARBON R10 120K |
| R114 R214 | 5240034020 | R.,CARBON R20 270K J |

R/P PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION | | | |
|---------|-----------|-------------|----------------|------|---|
| R314 | R414 | 5240034020 | R., CARBON R20 | 270K | J |
| R115 | R215 | 5240029220 | R., CARBON R20 | 2.7K | J |
| R315 | R415 | 5240029220 | R., CARBON R20 | 2.7K | J |
| R116 | R216 | 5240031820 | R., CARBON R20 | 33K | J |
| R316 | R416 | 5240031820 | R., CARBON R20 | 33K | J |
| | | | | | |
| R118 | R218 | 5240025820 | R., CARBON R20 | 100 | J |
| R318 | R418 | 5240025820 | R., CARBON R20 | 100 | J |
| R119 | R219 | 5240032620 | R., CARBON R20 | 68K | J |
| | | | | | |
| R319 | R419 | 5240032620 | R., CARBON R20 | 68K | J |
| R120 | R220 | 5240030020 | R., CARBON R20 | 5.6K | J |
| R320 | R420 | 5240030020 | R., CARBON R20 | 5.6K | J |
| R121 | R221 | 5240028220 | R., CARBON R20 | 1.0K | J |
| R321 | R421 | 5240028220 | R., CARBON R20 | 1.0K | J |
| | | | | | |
| R122 | R222 | 5240032220 | R., CARBON R20 | 47K | J |
| R322 | R422 | 5240032220 | R., CARBON R20 | 47K | J |
| R123 | R223 | 5240030620 | R., CARBON R10 | 10K | |
| R323 | R423 | 5240030620 | R., CARBON R10 | 10K | |
| R124 | R224 | 5240030620 | R., CARBON R10 | 10K | |
| | | | | | |
| R324 | R424 | 5240030620 | R., CARBON R10 | 10K | |
| R125 | R225 | 5240032220 | R., CARBON R20 | 47K | J |
| R325 | R425 | 5240032220 | R., CARBON R20 | 47K | J |
| R126 | R226 | 5240031720 | R., CARBON R20 | 30K | J |
| R326 | R426 | 5240031720 | R., CARBON R20 | 30K | J |
| | | | | | |
| R127 | R227 | 5240033220 | R., CARBON R10 | 120K | |
| R327 | R427 | 5240033220 | R., CARBON R10 | 120K | |
| R128 | R228 | 5240030020 | R., CARBON R20 | 5.6K | J |
| R328 | R428 | 5240030020 | R., CARBON R20 | 5.6K | J |
| R129 | R229 | 5240032220 | R., CARBON R20 | 47K | J |
| | | | | | |
| R329 | R429 | 5240032220 | R., CARBON R20 | 47K | J |
| R130 | R230 | 5240033020 | R., CARBON R20 | 100K | J |
| R330 | R430 | 5240033020 | R., CARBON R20 | 100K | J |
| R131 | R231 | 5240031820 | R., CARBON R20 | 33K | J |
| R331 | R431 | 5240031820 | R., CARBON R20 | 33K | J |
| | | | | | |
| R132 | R232 | 5240030620 | R., CARBON R10 | 10K | |
| R332 | R432 | 5240030620 | R., CARBON R10 | 10K | |
| R133 | R233 | 5240032220 | R., CARBON R20 | 47K | J |
| R333 | R433 | 5240032220 | R., CARBON R20 | 47K | J |
| R134 | R234 | 5240030620 | R., CARBON R10 | 10K | |
| | | | | | |
| R334 | R434 | 5240030620 | R., CARBON R10 | 10K | |
| R135 | R235 | 5240029620 | R., CARBON R20 | 3.9K | J |
| R335 | R435 | 5240029620 | R., CARBON R20 | 3.9K | J |
| R136 | R236 | 5240030620 | R., CARBON R10 | 10K | |
| R336 | R436 | 5240030620 | R., CARBON R10 | 10K | |
| | | | | | |
| R137 | R237 | 5240032220 | R., CARBON R20 | 47K | J |
| R337 | R437 | 5240032220 | R., CARBON R20 | 47K | J |
| R138 | R238 | 5240024220 | R., CARBON R20 | 22 | J |
| R338 | R438 | 5240024220 | R., CARBON R20 | 22 | J |
| R139 | R239 | 5240030820 | R., CARBON R20 | 12K | J |
| | | | | | |
| R339 | R439 | 5240030820 | R., CARBON R20 | 12K | J |
| R140 | R240 | 5240024420 | R., CARBON R20 | 27 | J |
| R340 | R440 | 5240024420 | R., CARBON R20 | 27 | J |
| R141 | R241 | 5240033020 | R., CARBON R20 | 100K | J |
| R341 | R441 | 5240033020 | R., CARBON R20 | 100K | J |

R/P PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION | | | |
|---------|-----------|-------------|-------------------|------|---|
| R142 | R242 | 5240031820 | R., CARBON R20 | 33K | J |
| R342 | R442 | 5240031820 | R., CARBON R20 | 33K | J |
| R143 | R243 | 5240032220 | R., CARBON R20 | 47K | J |
| R343 | R443 | 5240032220 | R., CARBON R20 | 47K | J |
| R144 | R244 | 5240025820 | R., CARBON R20 | 100 | J |
| | | | | | |
| R344 | R444 | 5240025820 | R., CARBON R20 | 100 | J |
| R145 | R245 | 5240032220 | R., CARBON R20 | 47K | J |
| R345 | R445 | 5240032220 | R., CARBON R20 | 47K | J |
| R146 | R246 | 5240032220 | R., CARBON R20 | 47K | J |
| R346 | R446 | 5240032220 | R., CARBON R20 | 47K | J |
| | | | | | |
| R147 | R247 | 5240030620 | R., CARBON R10 | 10K | |
| R347 | R447 | 5240030620 | R., CARBON R10 | 10K | |
| R148 | R248 | 5240030820 | R., CARBON R20 | 12K | J |
| R348 | R448 | 5240030820 | R., CARBON R20 | 12K | J |
| R149 | R249 | 5240031420 | R., CARBON R10 | 22K | |
| | | | | | |
| R349 | R449 | 5240031420 | R., CARBON R10 | 22K | |
| R150 | R250 | 5240031420 | R., CARBON R10 | 22K | |
| R350 | R450 | 5240031420 | R., CARBON R10 | 22K | |
| R151 | R251 | 5240032220 | R., CARBON R20 | 47K | J |
| R351 | R451 | 5240032220 | R., CARBON R20 | 47K | J |
| | | | | | |
| R152 | R252 | 5240033020 | R., CARBON R20 | 100K | J |
| R352 | R452 | 5240033020 | R., CARBON R20 | 100K | J |
| R153 | R253 | 5240033020 | R., CARBON R20 | 100K | J |
| R353 | R453 | 5240033020 | R., CARBON R20 | 100K | J |
| R154 | R254 | 5240024220 | R., CARBON R20 | 22 | J |
| | | | | | |
| R354 | R454 | 5240024220 | R., CARBON R20 | 22 | J |
| R155 | R255 | 5240028220 | R., CARBON R20 | 1.0K | J |
| R355 | R455 | 5240028220 | R., CARBON R20 | 1.0K | J |
| R156 | R256 | 5240177800 | R., CARBON ELR25 | 10M | J |
| R356 | R456 | 5240177800 | R., CARBON ELR25 | 10M | J |
| | | | | | |
| R157 | R257 | 5240177800 | R., CARBON ELR25 | 10M | J |
| R357 | R457 | 5240177800 | R., CARBON ELR25 | 10M | J |
| R158 | R258 | 5240029420 | R., CARBON R20 | 3.3K | J |
| R358 | R458 | 5240029420 | R., CARBON R20 | 3.3K | J |
| R159 | R259 | 5240031820 | R., CARBON R20 | 33K | J |
| | | | | | |
| R359 | R459 | 5240031820 | R., CARBON R20 | 33K | J |
| R160 | R260 | 5240032020 | R., CARBON R20 | 39K | J |
| R360 | R460 | 5240032020 | R., CARBON R20 | 39K | J |
| R161 | R261 | 5240024220 | R., CARBON R20 | 22 | J |
| R361 | R461 | 5240024220 | R., CARBON R20 | 22 | J |
| | | | | | |
| R162 | R262 | 5240034020 | R., CARBON R20 | 270K | J |
| R362 | R462 | 5240034020 | R., CARBON R20 | 270K | J |
| R163 | R263 | 5240023420 | R., CARBON 10 OHM | | |
| R363 | R463 | 5240023420 | R., CARBON 10 OHM | | |
| R164 | R264 | 5240035420 | R., CARBON R20 | 1.0M | J |
| | | | | | |
| R364 | R464 | 5240035420 | R., CARBON R20 | 1.0M | J |
| R165 | R265 | 5240035120 | R., CARBON R20 | 750K | J |
| R365 | R465 | 5240035120 | R., CARBON R20 | 750K | J |
| R166 | R266 | 5240029820 | R., CARBON R20 | 4.7K | J |
| R366 | R466 | 5240029820 | R., CARBON R20 | 4.7K | J |
| | | | | | |
| R167 | R267 | 5240031820 | R., CARBON R20 | 33K | J |
| R367 | R467 | 5240031820 | R., CARBON R20 | 33K | J |
| R168 | R268 | 5240030220 | R., CARBON R20 | 6.8K | J |
| R368 | R468 | 5240030220 | R., CARBON R20 | 6.8K | J |
| R169 | R269 | 5240031820 | R., CARBON R20 | 33K | J |

R/P PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-----------|----------------------------------|
| R369 | R469 | 5240031820 R., CARBON R20 33K J |
| R170 | R270 | 5240032920 R., CARBON R20 91K J |
| R370 | R470 | 5240032920 R., CARBON R20 91K J |
| R171 | R271 | 5240029820 R., CARBON R20 4.7K J |
| R371 | R471 | 5240029820 R., CARBON R20 4.7K J |
| R172 | R272 | 5240031420 R., CARBON R10 22K |
| R372 | R472 | 5240031420 R., CARBON R10 22K |
| R173 | R273 | 5240031420 R., CARBON R10 22K |
| R373 | R473 | 5240031420 R., CARBON R10 22K |
| R174 | R274 | 5240030620 R., CARBON R10 10K |
| R374 | R474 | 5240030620 R., CARBON R10 10K |
| R175 | R275 | 5240030620 R., CARBON R10 10K |
| R375 | R475 | 5240030620 R., CARBON R10 10K |
| R176 | R276 | 5240031420 R., CARBON R10 22K |
| R376 | R476 | 5240031420 R., CARBON R10 22K |
| R177 | R277 | 5240031420 R., CARBON R10 22K |
| R377 | R477 | 5240031420 R., CARBON R10 22K |
| R178 | R278 | 5240030620 R., CARBON R10 10K |
| R378 | R478 | 5240030620 R., CARBON R10 10K |
| R179 | R279 | 5240031420 R., CARBON R10 22K |
| R379 | R479 | 5240031420 R., CARBON R10 22K |
| R180 | R280 | 5240031420 R., CARBON R10 22K |
| R380 | R480 | 5240031420 R., CARBON R10 22K |
| R181 | R281 | 5240028220 R., CARBON R20 1.0K J |
| R381 | R481 | 5240028220 R., CARBON R20 1.0K J |
| R182 | R282 | 5240031420 R., CARBON R10 22K |
| R382 | R482 | 5240031420 R., CARBON R10 22K |
| R183 | R283 | 5240029020 R., CARBON R10 2.2K |
| R383 | R483 | 5240029020 R., CARBON R10 2.2K |
| R184 | R284 | 5240031420 R., CARBON R10 22K |
| R384 | R484 | 5240031420 R., CARBON R10 22K |
| R185 | R285 | 5240025420 R., CARBON R20 68 J |
| R385 | R485 | 5240025420 R., CARBON R20 68 J |
| R186 | R286 | 5240028620 R., CARBON R20 1.5K J |
| R386 | R486 | 5240028620 R., CARBON R20 1.5K J |
| R187 | R287 | 5240033020 R., CARBON R20 100K J |
| R387 | R487 | 5240033020 R., CARBON R20 100K J |
| R188 | R288 | 5240024220 R., CARBON R20 22 J |
| R388 | R488 | 5240024220 R., CARBON R20 22 J |
| R189 | R289 | 5240031820 R., CARBON R20 33K J |
| R389 | R489 | 5240031820 R., CARBON R20 33K J |
| R190 | R290 | 5240031220 R., CARBON R20 18K J |
| R390 | R490 | 5240031220 R., CARBON R20 18K J |
| R191 | R291 | 5240032220 R., CARBON R20 47K J |
| R391 | R491 | 5240032220 R., CARBON R20 47K J |
| R192 | R292 | 5240031020 R., CARBON R10 15K |
| R392 | R492 | 5240031020 R., CARBON R10 15K |
| R510 | R520 | 5240030020 R., CARBON R20 5.6K J |
| R511 | R521 | 5240030620 R., CARBON R10 10K |
| R512 | R522 | 5240030620 R., CARBON R10 10K |
| R513 | R523 | 5240029820 R., CARBON R20 4.7K J |
| R514 | R524 | 5240029820 R., CARBON R20 4.7K J |
| R515 | R525 | 5240030620 R., CARBON R10 10K |
| R516 | R526 | 5240030020 R., CARBON R20 5.6K J |
| R517 | R527 | 5240030020 R., CARBON R20 5.6K J |

R/P PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-----------|----------------------------------|
| R518 | R528 | 5240030620 R., CARBON R10 10K |
| R519 | R529 | 5240031420 R., CARBON R10 22K |
| R530 | R540 | 5240030020 R., CARBON R20 5.6K J |
| R531 | R541 | 5240030620 R., CARBON R10 10K |
| R532 | R542 | 5240030620 R., CARBON R10 10K |
| R533 | R543 | 5240029820 R., CARBON R20 4.7K J |
| R534 | R544 | 5240029820 R., CARBON R20 4.7K J |
| R535 | R545 | 5240030620 R., CARBON R10 10K |
| R536 | R546 | 5240030020 R., CARBON R20 5.6K J |
| R537 | R547 | 5240030020 R., CARBON R20 5.6K J |
| R538 | R548 | 5240030620 R., CARBON R10 10K |
| R539 | R549 | 5240031420 R., CARBON R10 22K |
| R610 | R620 | 5240030620 R., CARBON R10 10K |
| R611 | R621 | 5240031420 R., CARBON R10 22K |
| R612 | R622 | 5240030620 R., CARBON R10 10K |
| R613 | R623 | 5240031420 R., CARBON R10 22K |
| R614 | R624 | 5240029820 R., CARBON R20 4.7K J |
| R615 | R625 | 5240031420 R., CARBON R10 22K |
| R616 | R626 | 5240030620 R., CARBON R10 10K |
| R617 | R627 | 5240030620 R., CARBON R10 10K |
| R618 | R628 | 5240027020 R., CARBON R20 330 J |
| R619 | R629 | 5240023220 R., CARBON R20 8.2 J |
| R630 | R640 | 5240030620 R., CARBON R10 10K |
| R631 | R641 | 5240031420 R., CARBON R10 22K |
| R632 | R642 | 5240030620 R., CARBON R10 10K |
| R633 | R643 | 5240031420 R., CARBON R10 22K |
| R634 | R644 | 5240029820 R., CARBON R20 4.7K J |
| R635 | R645 | 5240031420 R., CARBON R10 22K |
| R636 | R646 | 5240030620 R., CARBON R10 10K |
| R637 | R647 | 5240030620 R., CARBON R10 10K |
| R638 | R648 | 5240027020 R., CARBON R20 330 J |
| R639 | R649 | 5240023220 R., CARBON R20 8.2 J |
| R711 | R721 | 5280021700 R., TRIMMER 47KB H. |
| R712 | R722 | 5280021100 R., TRIMMER 4.7KB H. |
| R713 | R723 | 5280021700 R., TRIMMER 47KB H. |
| R714 | R724 | 5280021300 R., TRIMMER 10KB H. |
| R715 | R725 | 5280021700 R., TRIMMER 47KB H. |
| R716 | R726 | 5280021500 R., TRIMMER 22KB H. |
| R717 | R727 | 5280021500 R., TRIMMER 22KB H. |
| R718 | R728 | 5280020700 R., TRIMMER 1KB H. |
| R719 | R729 | 5280022200 R., TRIMMER 330K H. |
| R731 | R741 | 5280021700 R., TRIMMER 47KB H. |
| R732 | R742 | 5280021100 R., TRIMMER 4.7KB H. |
| R733 | R743 | 5280021700 R., TRIMMER 47KB H. |
| R734 | R744 | 5280021300 R., TRIMMER 10KB H. |
| R735 | R745 | 5280021700 R., TRIMMER 47KB H. |
| R736 | R746 | 5280021500 R., TRIMMER 22KB H. |
| R737 | R747 | 5280021500 R., TRIMMER 22KB H. |
| R738 | R748 | 5280020700 R., TRIMMER 1KB H. |
| R739 | R749 | 5280022200 R., TRIMMER 330K H. |
| RT11 | L041 | 5143128000 THERMISTOR, S5C-34 |
| T610 | T620 | 5320035000 IN PUT TRANS |
| T611 | T621 | 5320035100 OUT PUT TRANS |
| T630 | T640 | 5320035000 IN PUT TRANS |
| T631 | T641 | 5320035100 OUT PUT TRANS |

R/P PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-----------|------------------------------------|
| TP11 | L041 | 5544750000 PIN, COMBINATION |
| TP12 | L042 | 5544750000 PIN, COMBINATION |
| TP13 | L043 | 5544750000 PIN, COMBINATION |
| TP14 | L044 | 5544750000 PIN, COMBINATION |
| TP15 | L045 | 5336126200 CON. PLUG 8263-0212 WHI |
| U001 | | 5292204500 MODULE, OSC 85KHZ |
| U101 | U201 | 5220412500 IC, NJM4562 |
| U301 | U401 | 5220412500 IC, NJM4562 |
| U102 | U202 | 5220414300 IC, NJM4560 |
| U302 | U402 | 5220414300 IC, NJM4560 |
| U103 | U203 | 5220414300 IC, NJM4560 |
| U303 | U403 | 5220414300 IC, NJM4560 |
| U104 | U204 | 5220419400 IC, LC4066B |
| U304 | U404 | 5220419400 IC, LC4066B |
| U105 | U205 | 5220414501 IC, UPC1252H2 |
| U305 | U405 | 5220414501 IC, UPC1252H2 |
| U106 | U206 | 5220414601 IC, UPC1253H2 |
| U306 | U406 | 5220414601 IC, UPC1253H2 |

INPUT AMP PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-----------|--|
| | | *5200167100 INPUT AMP PCB ASSY |
| | | *5210167100 INPUT AMP PCB |
| C101 | | 5170352000 C., MYLAR 0.001UF/100V JT |
| C103 | C104 | 5260165252 C., ELEC. 47UF/25V M USM VT |
| C105 | | 5170360000 C., MYLAR 0.0022UF/100V JT |
| C106 | | 5263106220 POLYPRO. 220PF 100V J |
| C107 | | 5260165052 C., ELEC. 47UF 10V M USM VT |
| C108 | | 5260163452 C., ELEC. 22UF 25V |
| C110 | | 5170358000 C., MYLAR 0.0018UF/100V JT |
| C111 | | 5170354000 C., MYLAR 0.0012UF/100V JT |
| C112 | | 5263167323 C., METAL 0.033UF 50V J |
| C113 | | 5263167123 C., METAL 0.022UF 50V J |
| C114 | | 5260162550 C., ELEC. 10UF 16V |
| C115 | | 5260162550 C., ELEC. 10UF 16V |
| C116 | | 5260163452 C., ELEC. 22UF 25V |
| C119 | | 5260162550 C., ELEC. 10UF 16V |
| C120 | | 5263167123 C., METAL 0.022UF 50V J |
| C122 | C123 | 5260162550 C., ELEC. 10UF 16V |
| C125 | C126 | 5173433000 C., CERAMIC 0.010UF 50V Z |
| D101 | D102 | 5224015020 DIODE, 1SS133T-77 |
| J101 | | 5122383000 CONN. SOCKET 3024-12AH |
| P101 | | 5336126400 CONN. PLUG 263-0412 WH |
| Q101 | Q102 | 5145103000 FET, 2SK-68A-M |
| Q103 | | 5230780920 SI. TR. 2SC2603F |
| R101 | | 5240025820 R., CARBON R20 100 J |
| R103 | | 5240028220 R., CARBON R20 1.0K J |
| R104 | | 5240033020 R., CARBON R20 100K J |
| R105 | R106 | 5240029220 R., CARBON R20 2.7K J |
| R107 | | 5240026620 R., CARBON R20 220 J |
| R108 | | 5240029820 R., CARBON R20 4.7K J |
| R109 | R110 | 5183578000 R., INCOMBUSTIBLE 1/4W 100 |
| R111 | | 5240033020 R., CARBON R20 100K J |
| R112 | | 5240035420 R., CARBON R20 1.0M J |
| R113 | | 5282014300 1S1UVR 16, 10KC |
| R114 | | 5240024520 R., CARBON R20 30 J |
| R115 | | 5240025820 R., CARBON R20 100 J |
| R116 | | 5240033820 R., CARBON R10 220K |
| R117 | | 5240033020 R., CARBON R20 100K J |
| R119 | R120 | 5240031020 R., CARBON R10 15K |
| R121 | R122 | 5240030620 R., CARBON R10 10K |
| R123 | R124 | 5240029720 R., CARBON R20 4.3K J |
| R125 | R126 | 5240030620 R., CARBON R10 10K |
| R127 | R128 | 5283505300 2S3UVR 16, 10KB+100KEX2 |
| R131 | | 5240033020 R., CARBON R20 100K J |
| R132 | | 5240030620 R., CARBON R10 10K |
| R133 | | 5240031020 R., CARBON R10 15K |
| R134 | | 5282410500 1S2UVR 16, 5KA+5KC |
| R135 | R138 | 5240031420 R., CARBON R10 22K |
| R139 | R140 | 5282014400 1S1UVR 16, 20KA |
| R142 | | 5240027620 R., CARBON R20 560 J |
| R143 | R144 | 5240031420 R., CARBON R10 22K |
| R145 | | 5240033020 R., CARBON R20 100K J |
| R146 | | 5240031520 R., CARBON R20 24K J |
| R147 | | 5240031620 R., CARBON R20 27K J |
| R148 | | 5240030620 R., CARBON R10 10K |

Parts marked with *require longer delivery time.

INPUT AMP PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|------------|----------------------|
| R149 | 5240030620 | R.,CARBON R10 10K |
| R151 | 5240032220 | R.,CARBON R20 47K J |
| R152 | 5240025820 | R.,CARBON R20 100 J |
| S101 | 5300514200 | SWITCH,LEVER SLK2NBC |
| S102 | 5300040300 | SWITCH,PUSH SUJ50A |
| U101 U103 | 5220414300 | IC,NJM4560, |
| U102 | 5220411100 | IC,NJM4560DX |

MONITOR PCB ASSY(A)

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|----------------------------|
| | *5200167700 | MONITOR PCB ASSY(A) |
| | *5210167701 | MONITOR PCB(A) |
| C101 C301 | 5172208000 | C.,CERAMIC 47PF/50V T |
| C102 C302 | 5260163452 | C.,ELEC. 22UF 25V |
| C103 C303 | 5260162550 | C.,ELEC.10UF 16V |
| C104 C304 | 5172208000 | C.,CERAMIC 47PF/50V T |
| C105 C305 | 5260163452 | C.,ELEC. 22UF 25V |
| C106 C107 | 5260165252 | C.,ELEC.4.7UF/25V M USM VT |
| C108 C109 | 5173433000 | C.,CERAMIC 0.010UF 50V Z |
| C351 C451 | 5172208000 | C.,CERAMIC 47PF/50V T |
| C352 C452 | 5260163452 | C.,ELEC. 22UF 25V |
| C353 C453 | 5260162550 | C.,ELEC.10UF 16V |
| C354 C454 | 5172208000 | C.,CERAMIC 47PF/50V T |
| C355 C455 | 5260163452 | C.,ELEC. 22UF 25V |
| D101 | 5224015020 | DIODE,1SS133T-77 |
| D102 D202 | 5224015020 | DIODE,1SS133T-77 |
| D302 D402 | 5224015020 | DIODE,1SS133T-77 |
| D103 D203 | 5224015020 | DIODE,1SS133T-77 |
| D303 D403 | 5224015020 | DIODE,1SS133T-77 |
| J101 | 5122383000 | CON. SOCKET 3024-12AH |
| P101 | 5336128200 | CON.,PLUG 8263-0211 WHT |
| P102 | 5336126200 | CON.,PLUG 8263-0212 WHT |
| P103 | 5336128400 | CON.,PLUG 8263-0411 WHT |
| Q101 Q301 | 5042553000 | SI.TR.2SA-733P |
| Q102 Q302 | 5230779520 | SI.TR.2SC1815GR |
| Q103 | 5042553000 | SI.TR.2SA-733P |
| Q104 | 5230779520 | SI.TR.2SC1815GR |
| R102 R302 | 5240031420 | R.,CARBON R10 22K |
| R104 R304 | 5240030620 | R.,CARBON R10 10K |
| R105 R305 | 5240031620 | R.,CARBON R20 27K J |
| R106 R306 | 5240033020 | R.,CARBON R20 100K J |
| R108 R308 | 5283505400 | 2S3UVR 16, 10KA+5KA.C |
| R109 R309 | 5240031420 | R.,CARBON R10 22K |
| R110 R310 | 5240031420 | R.,CARBON R10 22K |
| R111 R311 | 5240030620 | R.,CARBON R10 10K |
| R112 R312 | 5240030620 | R.,CARBON R10 10K |
| R113 R313 | 5240030620 | R.,CARBON R10 10K |
| R114 R314 | 5240030620 | R.,CARBON R10 10K |
| R115 R315 | 5240030620 | R.,CARBON R10 10K |
| R116 R316 | 5240030620 | R.,CARBON R10 10K |
| R117 | 5240030620 | R.,CARBON R10 10K |
| R118 | 5240030620 | R.,CARBON R10 10K |
| R119 | 5240030620 | R.,CARBON R10 10K |
| R120 | 5240030620 | R.,CARBON R10 10K |
| R121 R321 | 5240030820 | R.,CARBON R20 12K J |
| R351 R451 | 5240031420 | R.,CARBON R10 22K |
| R352 R452 | 5282014400 | 1S1UVR 16, 20KA |
| R353 R453 | 5240030620 | R.,CARBON R10 10K |
| R354 R454 | 5240031620 | R.,CARBON R20 27K J |
| R355 R455 | 5240032220 | R.,CARBON R20 47K J |
| R356 R456 | 5240025820 | R.,CARBON R20 100 J |
| S101 | 5300040200 | SWITCH,PUSH 2-2 N SUJ12A |
| S102 | 5300040400 | SWITCH,PUSH SUJ60A |
| U101 U301 | 5220414300 | IC,NJM4560, |
| U102 | 5220419400 | IC,LC4066B |
| U351 U451 | 5220414300 | IC,NJM4560, |

Parts marked with *require longer delivery time.

MONITOR PCB ASSY(B)

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|-----------------------------|
| | *5200167801 | MONITOR PCB ASSY(B) |
| | *5210167801 | MONITOR PCB(B) |
| C151 C251 | 5172208000 | C., CERAMIC 47PF/50V T |
| C152 C252 | 5260163452 | C., ELEC. 22UF 25V |
| C153 C253 | 5260162550 | C., ELEC. 10UF 16V |
| C154 C254 | 5172208000 | C., CERAMIC 47PF/50V T |
| C155 C255 | 5260163452 | C., ELEC. 22UF 25V |
| C171 C271 | 5260162550 | C., ELEC. 10UF 16V |
| C172 C272 | 5260165952 | C., ELEC. 100UF/10V M USM |
| C173 C273 | 5260165952 | C., ELEC. 100UF/10V M USM |
| C174 C274 | 5173070000 | C., ELEC. SM 470UF/6.3V |
| C175 C275 | 5173435000 | C., CERAMIC 0.047UF 50V Z |
| C201 C401 | 5172208000 | C., CERAMIC 47PF/50V T |
| C202 C402 | 5260163452 | C., ELEC. 22UF 25V |
| C203 C403 | 5260162550 | C., ELEC. 10UF 16V |
| C204 C404 | 5172208000 | C., CERAMIC 47PF/50V T |
| C205 C405 | 5260163452 | C., ELEC. 22UF 25V |
| C206 C207 | 5260165252 | C., ELEC. 47UF/25V M USM VT |
| C208 C209 | 5173433000 | C., CERAMIC 0.010UF 50V Z |
| D201 | 5224015020 | DIODE, 1SS133T-77 |
| J301 | 5122383000 | CON. SOCKET 3024-12AH |
| P301 | 5336128500 | CON. PLUG 8263-0511 WHT |
| P302 | 5336128300 | CON. PLUG 8263-0311 WHT |
| P303 | 5336128200 | CON., PLUG 8263-0211 WHT |
| P304 | 5336135200 | CON. PLUG 8263-0212 RD |
| Q201 Q401 | 5042553000 | SI. TR. 2SA-733P 0.25 180 |
| Q202 Q402 | 5230779520 | SI. TR. 2SC1815GR 0.4 80 |
| R151 R251 | 5240031420 | R., CARBON R10 22K |
| R152 R252 | 5240029820 | R., CARBON R20 4.7K J |
| R153 | 5282410600 | 1S2UVR 16, 10KAX2 |
| R154 R254 | 5240030820 | R., CARBON R20 12K J |
| R155 R255 | 5240032420 | R., CARBON R20 56K J |
| R156 R256 | 5240025820 | R., CARBON R20 100 J |
| R157 R257 | 5240032220 | R., CARBON R20 47K J |
| R158 | 5282410600 | 1S2UVR 16, 10KAX2 |
| R159 R259 | 5240031620 | R., CARBON R20 27K J |
| R171 R271 | 5240033020 | R., CARBON R20 100K J |
| R172 R272 | 5240033020 | R., CARBON R20 100K J |
| R173 R273 | 5240021020 | R., CARBON R20 1.0 J |
| R174 R274 | 5240032220 | R., CARBON R20 47K J |
| R202 R402 | 5240031420 | R., CARBON R10 22K |
| R204 R404 | 5240030620 | R., CARBON R10 10K |
| R205 R405 | 5240031620 | R., CARBON R20 27K J |
| R206 R406 | 5240033020 | R., CARBON R20 100K J |
| R208 R408 | 5283505400 | 2S3UVR 16, 10KA+5KA.C |
| R209 R409 | 5240031420 | R., CARBON R10 22K |
| R210 R410 | 5240031420 | R., CARBON R10 22K |
| R211 R411 | 5240030620 | R., CARBON R10 10K |
| R212 R412 | 5240030620 | R., CARBON R10 10K |
| R213 R413 | 5240030620 | R., CARBON R10 10K |
| R214 R414 | 5240030620 | R., CARBON R10 10K |
| R215 R415 | 5240030620 | R., CARBON R10 10K |
| R216 R416 | 5240030620 | R., CARBON R10 10K |
| R221 R421 | 5240030820 | R., CARBON R20 12K J |
| S201 | 5300040500 | SWITCH, PUSH SUJ70A |

MONITOR PCB ASSY(B)

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|------------|-------------|
| U151 U251 | 5220414300 | IC, NJM4560 |
| U171 U271 | 6048649000 | IC, NJM386D |
| U201 | 5220414300 | IC, NJM4560 |
| U202 | 5220419400 | IC, LC4066B |
| U401 | 5220414300 | IC, NJM4560 |

BUSS PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|---------------------------|
| | *5200168700 | BUSS PCB ASSY |
| | *5210168700 | BUSS PCB |
| P101-P108 | 5122364000 | PLUG, CONNECTOR 3022-12AD |
| P109 | 5336135200 | CON. PLUG 8263-0212 RD |
| P110 | 5336135300 | CON. PLUG 8263-0312 RD |

OPE SW PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|-----------------------|
| | *5200169300 | OPE SW PCB ASSY |
| | *5210169300 | OPE SW PCB |
| | *5800305001 | COLLAR, LED B |
| D501-D504 | 5225010100 | LED, SLP-155B RED |
| D505 | 5225010200 | LED, SLP-255B GRN |
| D506 D507 | 5225010100 | LED, SLP-155B RED |
| R501-R504 | 5240027220 | R., CARBON R20 390 J |
| R505 | 5240027020 | R., CARBON R20 330 J |
| R506 R507 | 5240027220 | R., CARBON R20 390 J |
| S501-S516 | 5302103100 | SWITCH, TACT B3F-1100 |

Parts marked with *require longer delivery time.

CONTROL PCB(A) ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|----------------------------|
| | *5200169200 | CONTROL PCB(A) ASSY |
| | *5210169200 | CONTROL PCB(A) |
| C501-C506 | 5173433000 | C., CERAMIC 0.010UF 50V Z |
| C507-C510 | 5173433000 | C., CERAMIC 0.010UF 50V Z |
| D501-D505 | 5224015020 | DIODE, 1SS133T-77 |
| D507-D511 | 5224015200 | DIODE, MC921 |
| D512 D513 | 5224015100 | DIODE, MC911 |
| P501 P502 | 5122359000 | CONNECTOR, M 7P |
| R501 R502 | 5183578000 | R., INCOMBUSTIBLE 1/4W 100 |
| R503 | 5240029820 | R., CARBON R20 4.7K J |
| R504 | 5240030620 | R., CARBON R10 10K |
| R505 | 5240029820 | R., CARBON R20 4.7K J |
| R506 | 5240030620 | R., CARBON R10 10K |
| R507 | 5240030620 | R., CARBON R10 10K |
| R508 | 5240029820 | R., CARBON R20 4.7K J |
| R509 | 5240030620 | R., CARBON R10 10K |
| R510 | 5240030620 | R., CARBON R10 10K |
| R511 | 5240029820 | R., CARBON R20 4.7K J |
| R512 | 5240030620 | R., CARBON R10 10K |
| R513 | 5240029820 | R., CARBON R20 4.7K J |
| R514 | 5240030620 | R., CARBON R10 10K |
| R515 | 5240030620 | R., CARBON R10 10K |
| R516 | 5240029820 | R., CARBON R20 4.7K J |
| R517 | 5240030620 | R., CARBON R10 10K |
| R518 | 5240030620 | R., CARBON R10 10K |
| R519 | 5240033020 | R., CARBON R20 100K J |
| R520 | 5240033020 | R., CARBON R20 100K J |
| R521 | 5240033020 | R., CARBON R20 100K J |
| R522 | 5240033020 | R., CARBON R20 100K J |
| U501 U502 | 5220038900 | IC, LB1294 |
| U503-U505 | 5220017200 | IC, HD14069UBP |
| U506 | 5220017400 | IC, HD14071BP |
| U507 | 6048661000 | IC, M54517P |
| U508 U509 | 5220016100 | IC, HD14013BP, |

CONTROL PCB (B) ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|------------------------------|
| | *5200170500 | CONTROL PCB B ASSY |
| | *5210170500 | CONT PCB B |
| C501-C504 | 5173433000 | C., CERAMIC 0.010UF 50V Z |
| C509 | 5173433000 | C., CERAMIC 0.010UF 50V Z |
| C510 C512 | 5260165052 | C., ELEC. 4.7UF 10V M USM VT |
| C511 | 5260162550 | C., ELEC. 10UF 16V |
| C513 | 5263106220 | POLYPRO. 220PF 100V J |
| C514 | 5263106220 | POLYPRO. 220PF 100V J |
| C515 | 5260162050 | C., ELEC. 4.7UF 35V M SM |
| C516 | 5260162050 | C., ELEC. 4.7UF 35V M SM |
| CR50 | 5347000900 | CERAMIC OSC KBR-800H |
| D501-D507 | 5224015300 | DIODE, MC931 |
| D508 | 5224015100 | DIODE, MC911 |
| D509 | 5224015200 | DIODE, MC921 |
| D510-D514 | 5224015020 | DIODE, 1SS133T-77 |
| D515 | 5224015020 | DIODE, 1SS133T-77 |
| L501 | 5286002100 | COIL, CHOKE 1.5MH |
| P501 | 5336135600 | CON. PLUG 8263-0612 RD |
| P502 | 5336127100 | CON. PLUG 8263-1112 WHT |
| P503 | 5336135900 | CON. PLUG 8263-0912 RD |
| P504 | 5336127200 | CON. PLUG 8263-1212 WHT |
| P505 | 5336127000 | CON. PLUG 8263-1012 WHT |
| P506 | 5336145400 | CON. PLUG 8263-0412 YEW |
| P507 | 5336126800 | CON. PLUG 8263-0812 WHT |
| P508 | 5336126600 | CON. PLUG 8263-0612 WHT |
| P509 | 5336145600 | CON. PLUG 8263-0612 YEW |
| P510 | 5336135400 | CON. PLUG 8263-0412 RD |
| P511 | 5336145400 | CON. PLUG 8263-0412 YEW |
| P512 | 5336137400 | CON. PLUG 8263-0412 BK |
| P513 | 5336135400 | CON. PLUG 8263-0412 RD |
| P514 | 5336126400 | CON. PLUG 8263-0412 WHT |
| Q501 | 5230018920 | SI. TR. 2SA1115F 0.3 200 |
| Q502 | 5230780920 | SI. TR. 2SC2603F 0.3 200 |
| Q503 Q504 | 5230018920 | SI. TR. 2SA1115F 0.3 200 |
| Q505-Q507 | 5230780920 | SI. TR. 2SC2603F 0.3 200 |
| R501-R506 | 5240028220 | R., CARBON R20 1.0K J |
| R507-R512 | 5240028220 | R., CARBON R20 1.0K J |
| R513-R516 | 5240028220 | R., CARBON R20 1.0K J |
| R517 | 5240030620 | R., CARBON R10 10K |
| R518 | 5240029820 | R., CARBON R20 4.7K J |
| R519 | 5240030620 | R., CARBON R10 10K |
| R520 R521 | 5240030620 | R., CARBON R10 10K |
| R522 | 5240035420 | R., CARBON R20 1.0M J |
| R523 | 5240030620 | R., CARBON R10 10K |
| R524 | 5240033020 | R., CARBON R20 100K J |
| R525 | 5240030620 | R., CARBON R10 10K |
| R526 | 5240030620 | R., CARBON R10 10K |
| R527 | 5240030620 | R., CARBON R10 10K |
| R528 | 5240030620 | R., CARBON R10 10K |
| R529 | 5240030020 | R., CARBON R20 5.6K J |
| R530 | 5240033020 | R., CARBON R20 100K J |
| R531 | 5240030620 | R., CARBON R10 10K |
| R532 | 5240030620 | R., CARBON R10 10K |
| R533 | 5240029820 | R., CARBON R20 4.7K J |
| R534 | 5240030620 | R., CARBON R10 10K |

Parts marked with *require longer delivery time.

CONTROL (B) PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION | | |
|-----------|------------|-------------------|------|---|
| R535 | 5240032820 | R., CARBON R20 | 82K | J |
| R536 | 5240030620 | R., CARBON R10 | 10K | |
| R537 | 5240030620 | R., CARBON R10 | 10K | |
| R538-R540 | 5240030620 | R., CARBON R10 | 10K | |
| R541-R543 | 5240029820 | R., CARBON R20 | 4.7K | J |
| R544 | 5240029420 | R., CARBON R20 | 3.3K | J |
| R545 | 5240026820 | R., CARBON R20 | 270 | J |
| R546 | 5240027820 | R., CARBON R20 | 680 | J |
| R547 | 5240029220 | R., CARBON R20 | 2.7K | J |
| R548 | 5240030020 | R., CARBON R20 | 5.6K | J |
| R549 | 5280021700 | R., TRIMMER 47KB | H. | |
| R550 | 5280021300 | R., TRIMMER 10KB | H. | |
| R551 | 5280020900 | R., TRIMMER 2.2KB | H. | |
| R552 | 5280020900 | R., TRIMMER 2.2KB | H. | |
| R553 | 5240035420 | R., CARBON R20 | 1.0M | J |
| R554 | 5240030620 | R., CARBON R10 | 10K | |
| R555 | 5240028220 | R., CARBON R20 | 1.0K | J |
| R556 | 5240032220 | R., CARBON R20 | 47K | J |
| R557 | 5240030620 | R., CARBON R10 | 10K | |
| R558 | 5240030620 | R., CARBON R10 | 10K | |
| R559 | 5240032220 | R., CARBON R20 | 47K | J |
| R560 | 5240028220 | R., CARBON R20 | 1.0K | J |
| U501 | 5220019700 | IC, LC7800, | | |
| U502 | 5220806300 | IC, LM6402G-1820 | | |
| U503 | 5220806400 | IC, LM6416E-1821 | | |
| U504 | 5220017200 | IC, HD14069UBP | | |
| U505-U507 | 6048661000 | IC, M54517P | | |
| U508 U509 | 5220017200 | IC, HD14069UBP | | |
| U510-U513 | 5242111500 | R., ARRAY 10KX6 | | |
| U514-U517 | 5242111300 | R., ARRAY 10KX4 | | |

METER PCB ASSY(A)

| REF.NO. | PARTS NO. | DESCRIPTION | | |
|-----------|-------------|-----------------------|-----------|---|
| | *5200168500 | METER PCB ASSY(A) | | |
| | *5210168500 | METER PCB(A) | | |
| | *5800385100 | SPACER, LED | | |
| C001 C002 | 5260165252 | C., ELEC. 4.7UF/25V M | USM VT | |
| C101 | 5260213150 | C., ELEC. 22UF | 25V M SRA | |
| C102 | 5260212050 | C., ELEC. 4.7UF | 35V M SRA | |
| C103 C203 | 5260160750 | C., ELEC. 1UF50V SM | T-N | |
| C303 C403 | 5260160750 | C., ELEC. 1UF50V SM | T-N | |
| C201 C301 | 5260163452 | C., ELEC. 22UF | 25V | |
| C401 | 5260163452 | C., ELEC. 22UF | 25V | |
| C202 C302 | 5260162050 | C., ELEC. 4.7UF | 35V M SM | |
| C402 | 5260162050 | C., ELEC. 4.7UF | 35V M SM | |
| D101 D201 | 5224015400 | DIODE, 1K60 | | |
| D301 D401 | 5224015400 | DIODE, 1K60 | | |
| D102 D202 | 5224015400 | DIODE, 1K60 | | |
| D302 D402 | 5224015400 | DIODE, 1K60 | | |
| D103 D203 | 5224015020 | DIODE, 1SS133T-77 | | |
| D303 D403 | 5224015020 | DIODE, 1SS133T-77 | | |
| D104 D204 | 5224015020 | DIODE, 1SS133T-77 | | |
| D304 D404 | 5224015020 | DIODE, 1SS133T-77 | | |
| D105 D205 | 5225006900 | LED, PR3432S | RED | |
| D305 D405 | 5225006900 | LED, PR3432S | RED | |
| M101 M201 | 5296006101 | METER, VU | | |
| M301 M401 | 5296006101 | METER, VU | | |
| Q101 Q201 | 5230779520 | SI. TR. 2SC1815GR | | |
| Q301 Q401 | 5230779520 | SI. TR. 2SC1815GR | | |
| R101 Q201 | 5240031820 | R., CARBON R20 | 33K | J |
| R301 Q401 | 5240031820 | R., CARBON R20 | 33K | J |
| R102 R202 | 5240033020 | R., CARBON R20 | 100K | J |
| R302 R402 | 5240033020 | R., CARBON R20 | 100K | J |
| R103 R203 | 5240027420 | R., CARBON R20 | 470 | J |
| R303 R403 | 5240027420 | R., CARBON R20 | 470 | J |
| R104 R204 | 5150154000 | R., TRIMMER 10KB | | |
| R304 R404 | 5150154000 | R., TRIMMER 10KB | | |
| R105 R205 | 5240028820 | R., CARBON R20 | 1.8K | J |
| R305 R405 | 5240028820 | R., CARBON R20 | 1.8K | J |
| R106 R206 | 5240028820 | R., CARBON R20 | 1.8K | J |
| R306 R406 | 5240028820 | R., CARBON R20 | 1.8K | J |
| R107 R207 | 5240033020 | R., CARBON R20 | 100K | J |
| R307 R407 | 5240033020 | R., CARBON R20 | 100K | J |
| R108 R208 | 5240032220 | R., CARBON R20 | 47K | J |
| R308 R408 | 5240032220 | R., CARBON R20 | 47K | J |
| R109 R209 | 5240029820 | R., CARBON R20 | 4.7K | J |
| R309 R409 | 5240029820 | R., CARBON R20 | 4.7K | J |
| R110 R210 | 5240028220 | R., CARBON R20 | 1.0K | J |
| R310 R410 | 5240028220 | R., CARBON R20 | 1.0K | J |
| R111 R211 | 5240029820 | R., CARBON R20 | 4.7K | J |
| R311 R411 | 5240029820 | R., CARBON R20 | 4.7K | J |
| R112 R212 | 5240028420 | R., CARBON R20 | 1.2K | J |
| R312 R412 | 5240028420 | R., CARBON R20 | 1.2K | J |
| R113 R213 | 5240025220 | R., CARBON R20 | 56 | J |
| R313 R413 | 5240025220 | R., CARBON R20 | 56 | J |
| U101 U201 | 5220418800 | IC, M5218P | | |
| U301 U401 | 5220418800 | IC, M5218P | | |

Parts marked with *require longer delivery time.

METER PCB(B) ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|---------------------------|
| | *5200168600 | METER PCB(B) ASSY |
| | *5210168600 | METER PCB(B) |
| C001 C002 | 5260213050 | C.,ELEC. 22UF 16V M SRA |
| C101 C201 | 5260211650 | C.,ELEC. 3.3UF 35V M SRA |
| C102 C202 | 5260212850 | C.,ELEC. 22UF 6.3V M SRA |
| C103 C203 | 5260212050 | C.,ELEC. 4.7UF 35V M SRA |
| D101 D201 | 5224015400 | DIODE,1K60 |
| D102 D202 | 5224015400 | DIODE,1K60 |
| M101 M201 | 5296003300 | METER, VU |
| R001 R002 | 5183558000 | R.,INCOMBUSTIBLE F25 15 J |
| R101 R201 | 5240033220 | R.,CARBON R10 120K |
| R102 R202 | 5240033220 | R.,CARBON R10 120K |
| R103 R203 | 5280091700 | R.,TRIMMER 10KB V.METAL |
| R104 R204 | 5240027420 | R.,CARBON R20 470 J |
| R105 R205 | 5240028820 | R.,CARBON R20 1.8K J |
| R106 R206 | 5240028820 | R.,CARBON R20 1.8K J |
| U101 | 5220418800 | IC,M5218P |

DRIVE PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|--------------------------|
| | *5200169600 | DRIVE PCB ASSY |
| | *5210169600 | DRIVE PCB |
| C501 C502 | 5173433000 | C.,CERAMIC 0.010UF 50V Z |
| C503 C504 | 5260166052 | C.,ELEC. 100UF/16V M USM |
| C505-C507 | 5173433000 | C.,CERAMIC 0.010UF 50V Z |
| D501-D504 | 5143089000 | DIODE,W03C |
| R501 | 5240030020 | R.,CARBON R20 5.6K J |
| R502 | 5240027020 | R.,CARBON R20 330 J |
| R503 | 5240033420 | R.,CARBON R10 150K |
| R504 | 5240027020 | R.,CARBON R20 330 J |
| R505 | 5240029820 | R.,CARBON R20 4.7K J |
| R506 | 5240027020 | R.,CARBON R20 330 J |
| R507 | 5240030620 | R.,CARBON R10 10K |
| R508 | 5240030620 | R.,CARBON R10 10K |
| R509 | 5240023420 | R.,CARBON 10 OHM |
| R510 | 5240024220 | R.,CARBON R20 22 J |
| U501 | 5220418800 | IC,M5218P |

P.SUPPLY PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|-----------------------------|
| | *5200170200 | P.SUPPLY PCB ASSY [J,US,GE] |
| | *5200170210 | P.SUPPLY PCB ASSY [E,UK,A] |
| | *5200170220 | P.SUPPLY PCB ASSY [C] |
| | *5210170200 | POWER SUPPLY PCB |
| C001 C002 | △5173094000 | C.,ELEC. 3300UF 25V (SM) |
| C003-C005 | △5263164900 | C.,ME. 0.1UF 250V [E,UK,A] |
| C008 C009 | 5260214850 | C.,ELEC. 100UF 16V M SRA |
| C012 C013 | △5173089000 | C.,ELEC.2200UF 25V SM |
| C014 C015 | 5260211250 | C.,ELEC. 1.0UF 50V M SRA |
| C016 C017 | 5260214850 | C.,ELEC. 100UF 16V M SRA |
| C018 | △5173094000 | C.,ELEC. 3300UF 25V (SM) |
| C019 | △5173094000 | C.,ELEC. 3300UF 25V (SM) |
| C020 | △5173082000 | C.,ELEC.1000UF 25V SM |
| C021 | △5173088000 | C.,ELEC. 2000UF/16V SNAP |
| C022 | 5260214750 | C.,ELEC. 100UF 10V M SRA |
| C023 | 5260211250 | C.,ELEC. 1.0UF 50V M SRA |
| C024 | 5173088000 | C.,ELEC. 2200UF 16V (SM) |
| D001 | △5228005100 | SILICON STACK KBPC102 |
| D002 D003 | △5228005000 | SILICON STACK W02 |
| D004 D005 | 5143089000 | DIODE,W03C |
| D006 D007 | 5224543101 | DIODE,ZENER RD12EB2 FR |
| D008-D011 | 5224015020 | DIODE,1SS133T-77 |
| D012 D013 | 5143089000 | DIODE,W03C |
| D014 | 5224015020 | DIODE,1SS133T-77 |
| P001 | 5336139500 | CON.PLUG 8263-0511 RD |
| P002 | 5336128300 | CON.PLUG 8263-0311 WHT |
| P003 | 5336128500 | CON.PLUG 8263-0511 WHT |
| Q003 | 5230780920 | SI.TR.2SC2603F |
| R001 R002 | 5240030620 | R.,CARBON R10 10K |
| R009 R010 | 5240030620 | R.,CARBON R10 10K |
| R011 R012 | △5183596000 | R.,INCOMBUSTIBLE F25 560 |
| R013 | △5241181710 | R.,INCOM. 1.5 1/4W [C] |
| R014 | △5241216510 | R.,INCOMBUSTIBLE 27 1/4W |
| R015 | 5240030620 | R.,CARBON R10 10K |
| R016 | 5240030620 | R.,CARBON R10 10K |
| R017 | 5240030620 | R.,CARBON R10 10K |

Parts marked with *require longer delivery time.

[US]:U.S.A. [E]:EUROPE [UK]:U.K. [C]:CANADA

[A]:AUSTRALIA [GE]:GENERAL EXPORT [J]:JAPAN

IN/OUT PCB ASSY(A)-1

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|-------------------------|
| | *5200167400 | IN/OUT PCB ASSY(A)-1 |
| | *5210167400 | IN/OUT PCB(A) |
| J105 | 5330508900 | JACK,RCA 1P BK |
| J106 | 5330011400 | JACK,YKB21-5005 SINGLE |
| P104 | 5336128200 | CON.,PLUG 8263-0211 WHI |

IN/OUT PCB ASSY(A)-2

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|------------------------|
| | *5200167410 | IN/OUT PCB ASSY(A)-2 |
| | *5210167400 | IN/OUT PCB(A) |
| J105 | 5330508900 | JACK, RCA 1P BK |
| J106 | 5330011400 | JACK,YKB21-5005 SINGLE |

IN/OUT PCB ASSY(B)

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|------------------------|
| | *5200168100 | IN/OUT PCB ASSY(B) |
| | *5210168100 | IN/OUT PCB(B) |
| J001 | 5330510000 | JACK, RCA 12P |
| P001 | 5336210400 | CONNECTOR,PLUG 5129-4A |
| P002 | 5336212700 | CONNECTOR,PLUG 5089-7A |
| P003 | 5336212800 | CONNECTOR,PLUG 5089-8A |
| R001-P004 | 5240031420 | R.,CARBON R10 22K |
| R005-P008 | 5240025820 | R.,CARBON R20 100 J |

VR PCB ASSY(A)

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|-------------------|
| | *5200167500 | VR PCB ASSY(A) |
| | *5210167500 | VR PCB(A) |
| R129 | 5284009500 | VR,SLIDE 60, 10KA |

VR PCB ASSY(B)

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|---------------------|
| | *5200167900 | VR PCB ASSY(B) |
| | *5210167900 | VR PCB(B) |
| R103 | 5284009600 | VR, SLIDE 60, 10KX2 |

PHONE JACK PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|----------------------|
| | *5200168300 | PHONE JACK PCB ASSY |
| | *5210168300 | PHONE JACK PCB |
| J001 J002 | 5330011800 | JACK,PHONE YKB215118 |

PWR SW PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|---------------------------|
| | *5200170300 | PWR SW PCB ASSY [J] |
| | *5200170310 | PWR SW PCB ASSY [US] |
| | *5200170321 | PWR SW PCB ASSY [C] |
| | *5200170330 | PWR SW PCB ASSY [GE] |
| | *5200170340 | PWR SW PCB ASSY [E,UK,A] |
| | *5210170300 | POWER SW PCB |
| | *5210181000 | ISOLATE PCB [E,UK,A] |
| F001 | △5307035100 | FUSE, 1A 250V [C] |
| P001 | △5327007200 | WRAPPING,TERMINAL 2P |
| S001 | △5300031900 | SW.,PUSH SPLCLP 1.5MPCB |
| Z001 | △5052905000 | SPARK KILLER [J] |
| Z001 | △5052910000 | CR.,0.033+120 [US] |
| Z001 | △5292002600 | CR, 0.033+120 125V [C] |
| Z001 | △5292002500 | CR, 0.1+120 300VAC [GE] |
| Z001 | △5267702500 | C.,4700PF 250VAC [E,UK,A] |

SPEED SW PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|------------------------|
| | *5200169800 | SPEED SW PCB ASSY |
| | *5210169800 | SPEED SW PCB |
| P501 | 5336210500 | CONNECTOR PLUG 5129-5A |
| R513 | 5280002902 | R.,TRIMMER 2KB H. |
| R514 | 5280002802 | R.,TRIMMER 1KB H. |
| S503 | 5300909200 | SW.,SLIDE 2-2 N SSB022 |

SENSOR PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|---------------------|
| | *5200169700 | SENSOR PCB ASSY |
| | *5210169700 | SENSOR PCB |
| R511 | 5181506000 | R.,CARBON R25 10K J |
| U502 | 5228700100 | IC,DN6838 |

Parts marked with *require longer delivery time.

[US]:U.S.A. [E]:EUROPE [UK]:U.K. [C]:CANADA
[A]:AUSTRALIA [GE]:GENERAL EXPORT [J]:JAPAN

LED PCB ASSY(A)

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|---------------------------|
| | *5200167300 | LED PCB ASSY(A) |
| | *5210167300 | LED PCB(A) |
| | *5800304901 | COLLAR,LED;A |
| D103 | 5225006900 | LED,PR3432S RED |
| J103 | 5122373000 | CONNECTOR,SOCKET 3024-2AH |

LED PCB ASSY(B)

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|---------------------------|
| | *5200168200 | LED PCB ASSY(B) |
| | *5210168200 | LED PCB(B) |
| | *5800304901 | COLLAR,LED;A |
| D001-D005 | 5225006900 | LED,PR3432S RED |
| D006 | 5225014400 | LED,PG3432SY GRN |
| J001-J006 | 5122373000 | CONNECTOR,SOCKET 3024-2AH |
| R001-R006 | 5240027620 | R.,CARBON R20 560 J |

DBX SW PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|---------------------|
| | *5200168800 | DBX SW PCB ASSY |
| | *5210168800 | DBX SW PCB |
| D001 D002 | 5224015020 | DIODE,1SS133T-77 |
| S001 S002 | 5300911800 | SWITCH, SLIDE 2-2 N |

MIC JACK PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|-------------------|
| | *5200167200 | MIC JACK PCB ASSY |
| | *5210167200 | MIC JACK PCB |
| J102 | 5330010800 | JACK,MIC 1P |

PITCH CONTROL PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|---------------------------|
| | *5200169900 | PITCH CONTROL PCB ASSY |
| | *5210169900 | PITCH CONT PCB |
| | *5210170000 | LED PCB(C) |
| | *5800305001 | COLLAR, LED B |
| D505 | 5225010100 | LED,SLP-155B RED |
| D506 | 5225010200 | LED,SLP-255B GRN |
| J501 J502 | 5122373000 | CONNECTOR,SOCKET 3024-2AH |
| R515 | 5240029020 | R.,CARBON R10 2.2K |
| R516 | 5240025820 | R.,CARBON R20 100 J |
| R517 | 5282410700 | 1S2UVR 16, 1KB+2KB |
| R518 | 5240028420 | R.,CARBON R20 1.2K J |
| R519 | 5240027220 | R.,CARBON R20 390 J |
| S504 | 5300040600 | SWITCH,PUSH W 4-PSF00-C4L |

Parts marked with *require longer delivery time.

REMOTE PCB ASSY (PCB Omitted)

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|-------------------|
| | *5200168900 | REMOTE PCB ASSY |
| | *5210168900 | REMOTE PCB |
| | *5554099100 | BRACKET, CONN |
| J001 | *5780102608 | SCREW, PAN M2.6X8 |
| | 5334010100 | SOCKET, 12P CONN |

PUNCH IN/OUT PCB ASSY (PCB Omitted)

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|-----------------------|
| | *5200169000 | PUNCH IN/OUT PCB ASSY |
| | *5210169000 | PUNCH IN/OUT PCB |
| | *5330010800 | JACK, MIC 1P |

JOINT PCB ASSY

| REF.NO. | PARTS NO. | DESCRIPTION |
|-----------|-------------|----------------------------|
| | *5200169400 | JOINT PCB ASSY |
| | *5210169400 | JOINT PCB |
| | *5312000500 | FLUORESCENCE LAMP FG46B5 |
| J501 J502 | 5122378000 | CONNECTOR, SOCKET 3024-07A |

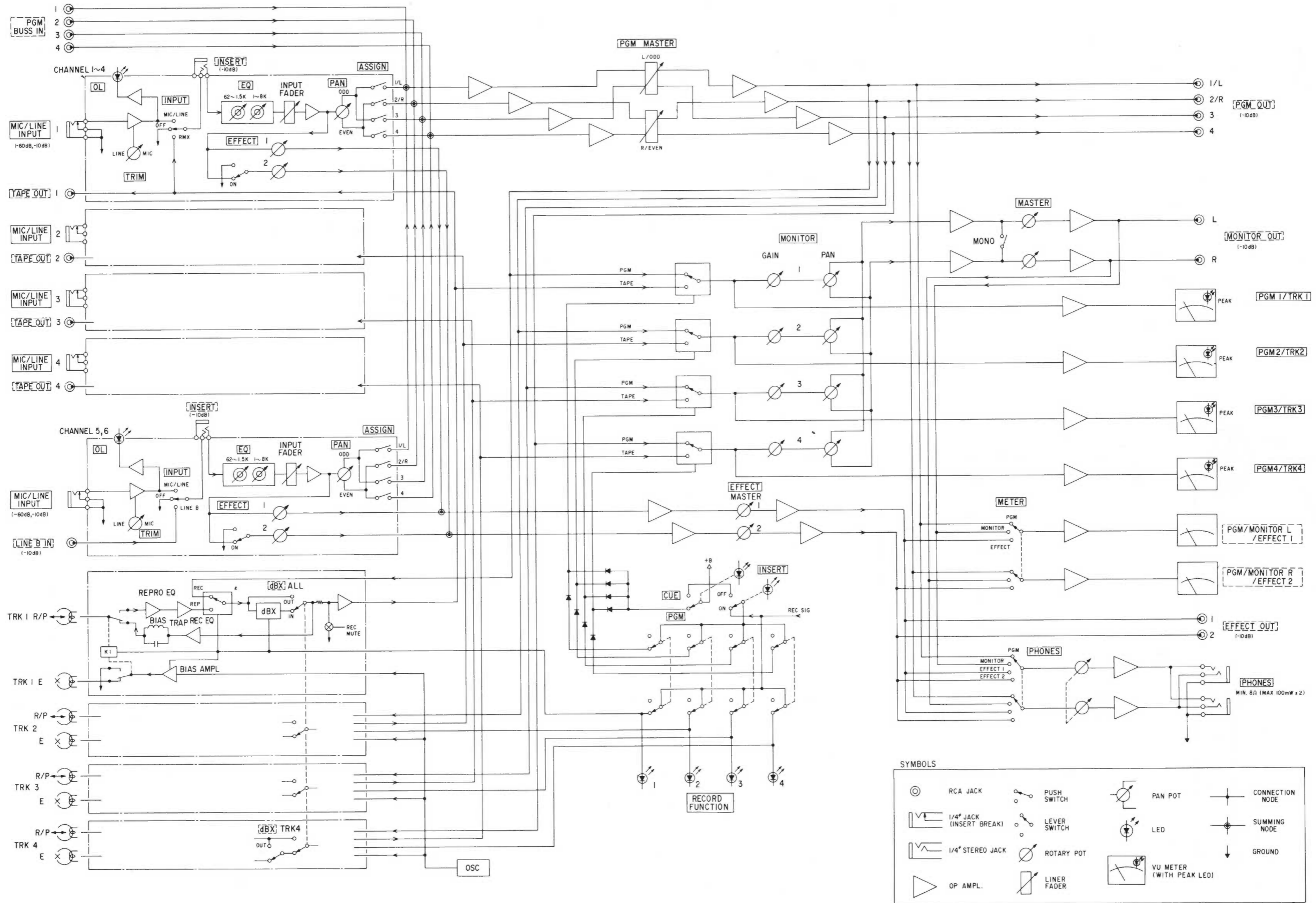
FUSE PCB ASSY (PCB Omitted) [E,UK,A]

| REF.NO. | PARTS NO. | DESCRIPTION |
|---------|-------------|-------------------|
| | *5200079300 | FUSE PCB ASSY |
| | *5210079300 | FUSE PCB |
| | *5142087000 | HOLDER, FUSE; PCB |
| FO01 | △5041138000 | FUSE, 500MA, 250V |
| FO02 | △5041138000 | FUSE, 500MA, 250V |
| FO03 | △5142185000 | FUSE, 630MA |
| FO04 | △5142185000 | FUSE, 630MA |
| FO05 | △5041140000 | FUSE, 1A-250V (T) |

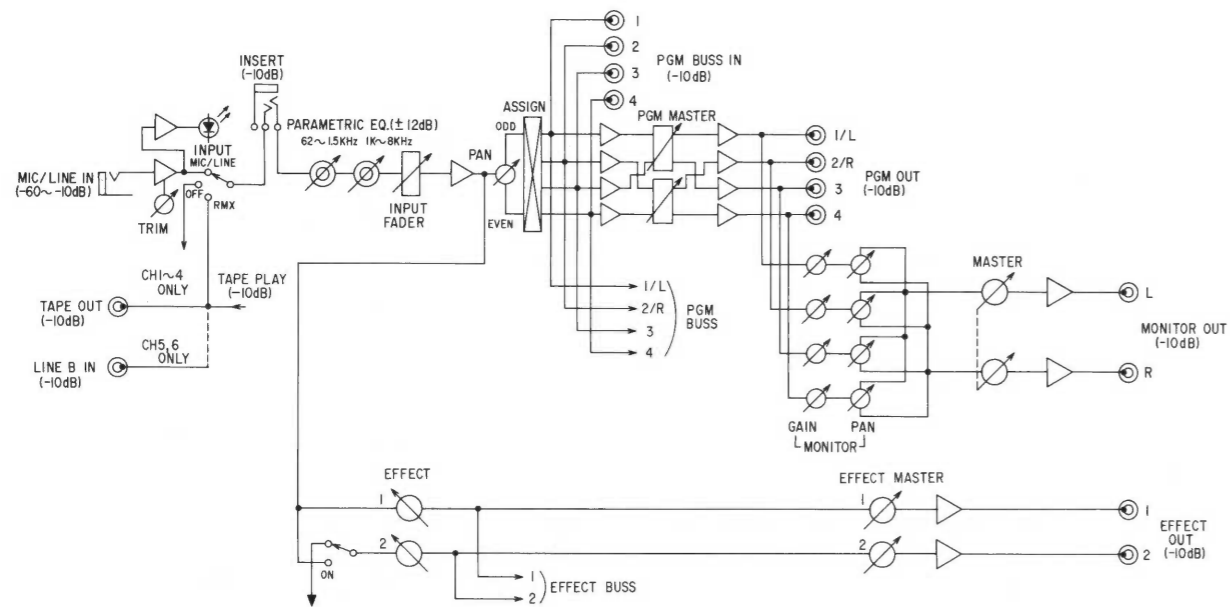
Parts marked with *require longer delivery time.

[US]:U.S.A. [E]:EUROPE [UK]:U.K. [C]:CANADA
[A]:AUSTRALIA [GE]:GENERAL EXPORT [J]:JAPAN

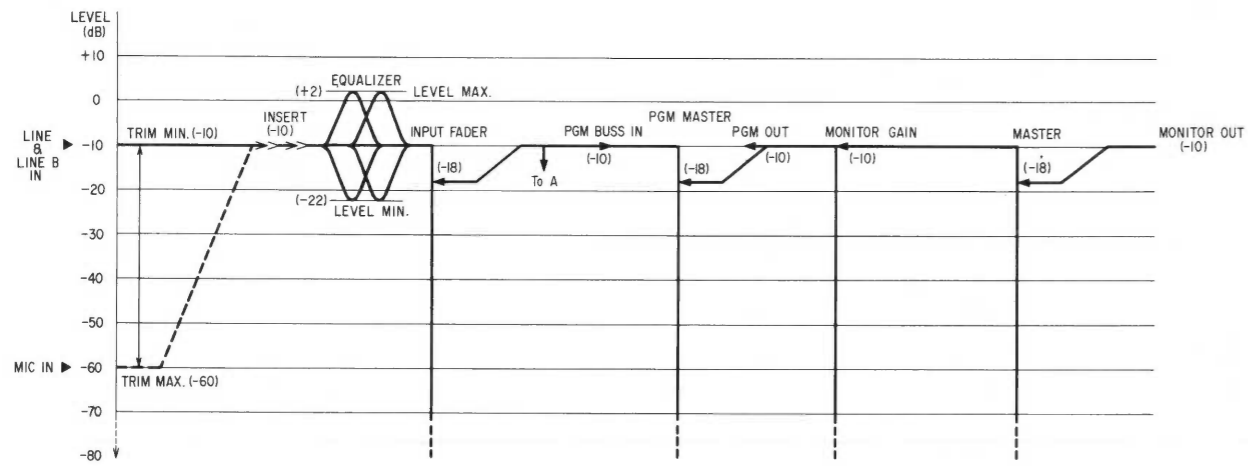
7. BLOCK DIAGRAM



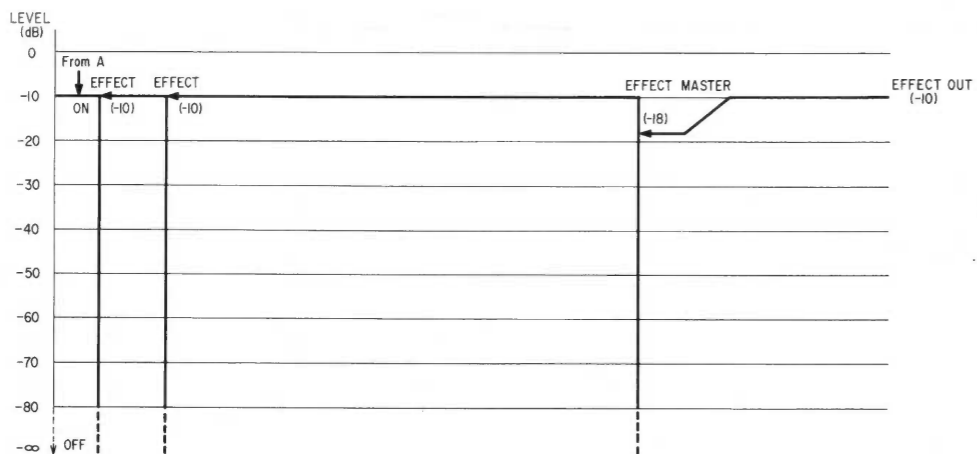
8. LEVEL DIAGRAM



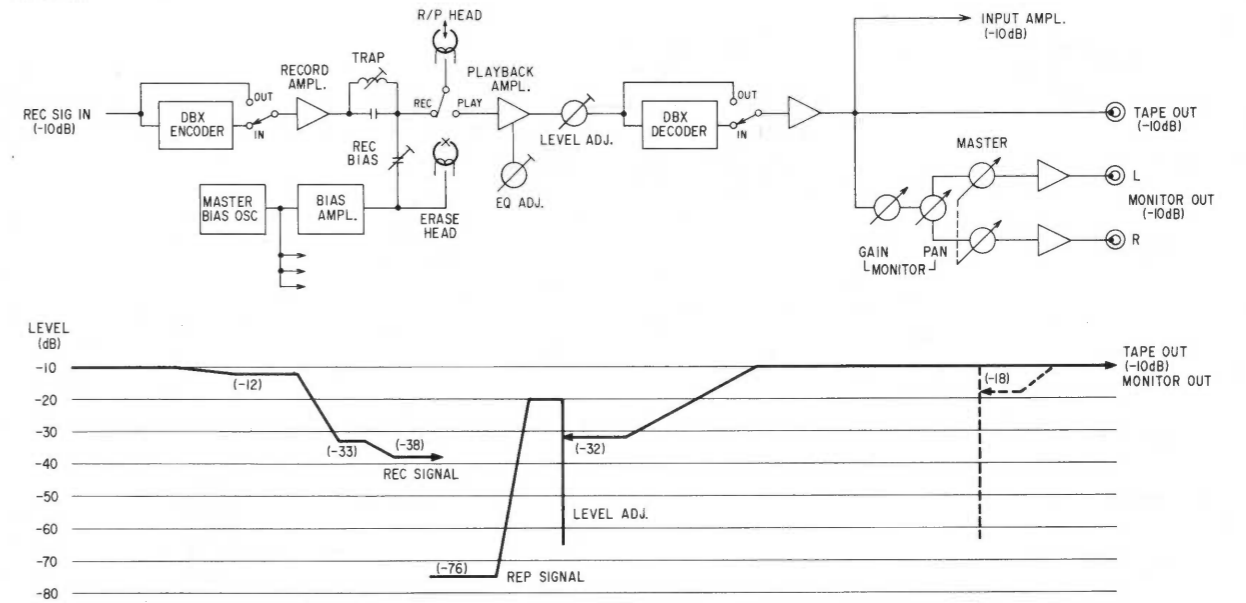
① INPUT / BUSS / MONITOR SECTION



② EFFECT SECTION

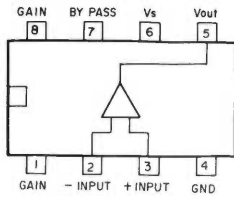


(AT 315Hz)

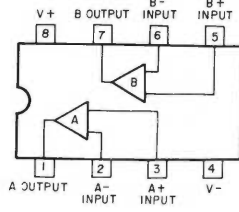


9. IC INTERNAL CIRCUIT

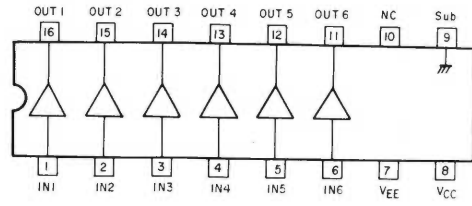
NJM386D



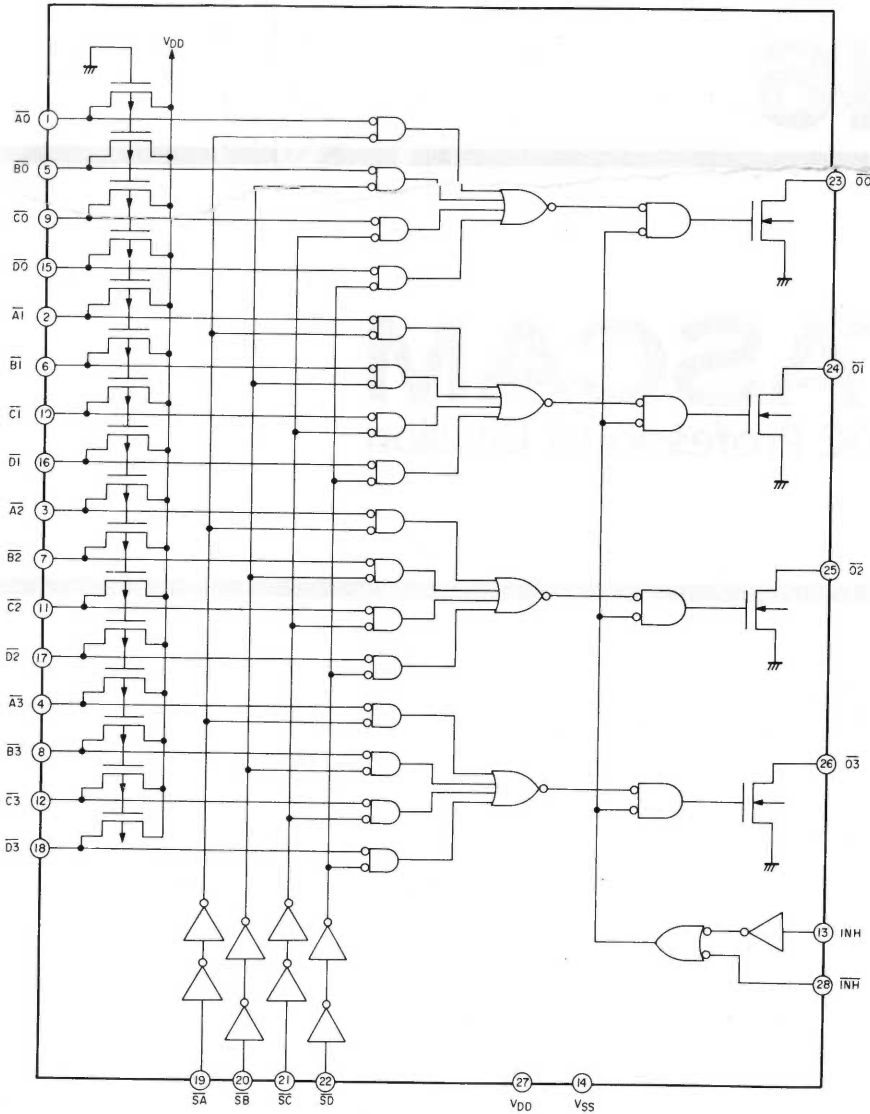
NJM4560D,DX
NJM4562DD



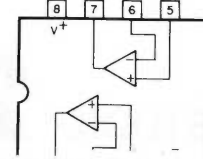
LBI294



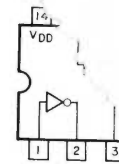
LC7800



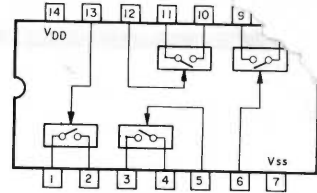
M5218P



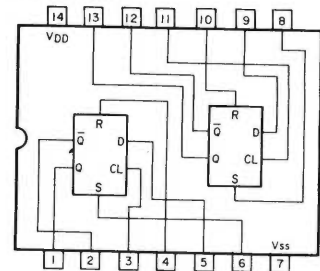
HL



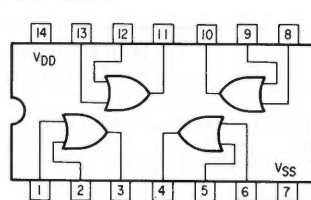
LC4066B



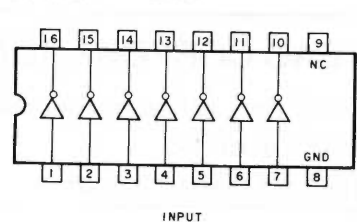
HD14013BP

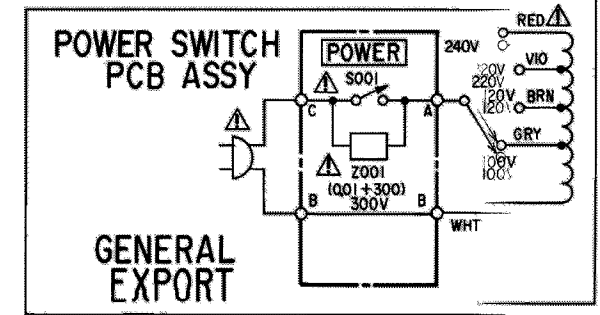
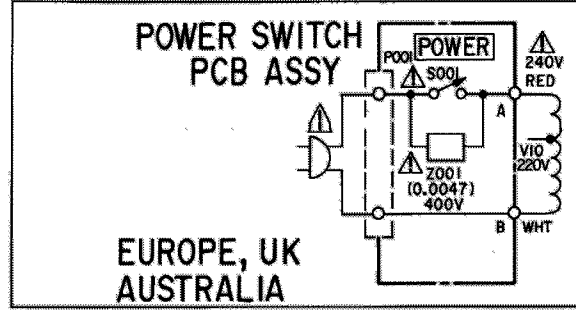
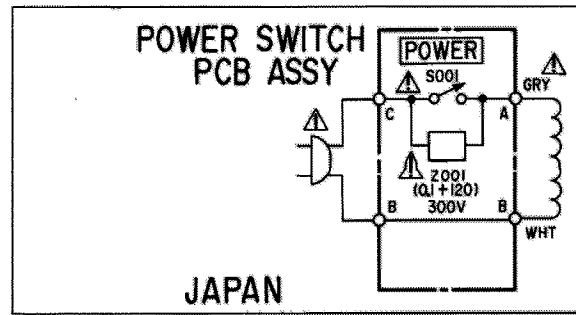
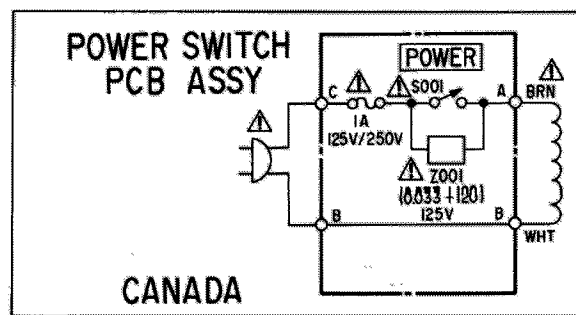
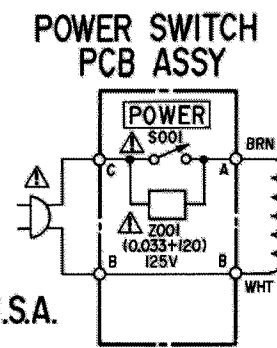
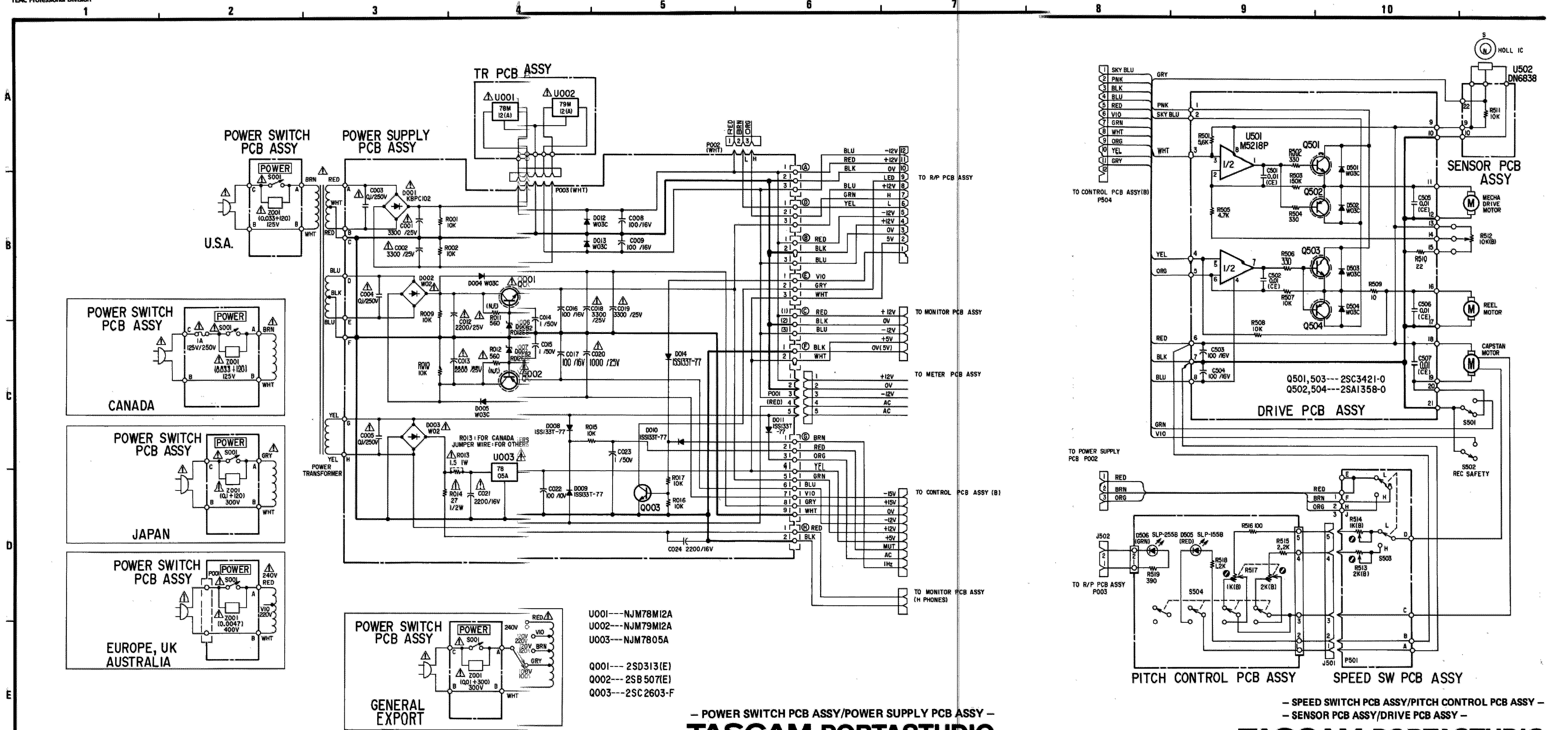


HD14071BP

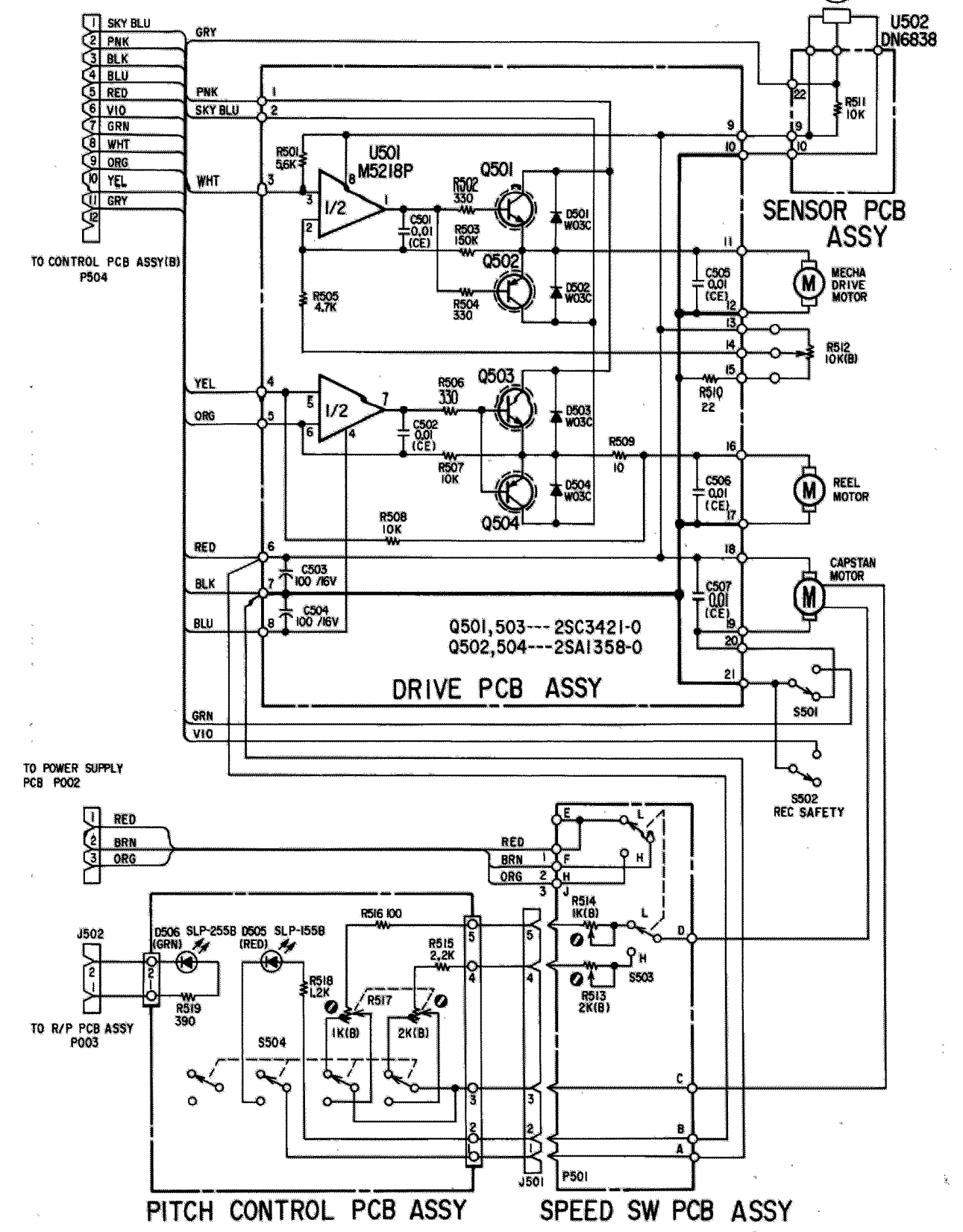


M54517P





- U001---NJM78M12A
- U002---NJM79M12A
- U003---NJM7805A
- Q001---2SD313(E)
- Q002---2SB507(E)
- Q003---2SC2603-F



1 2 3 4 5 6 7 8 9 10

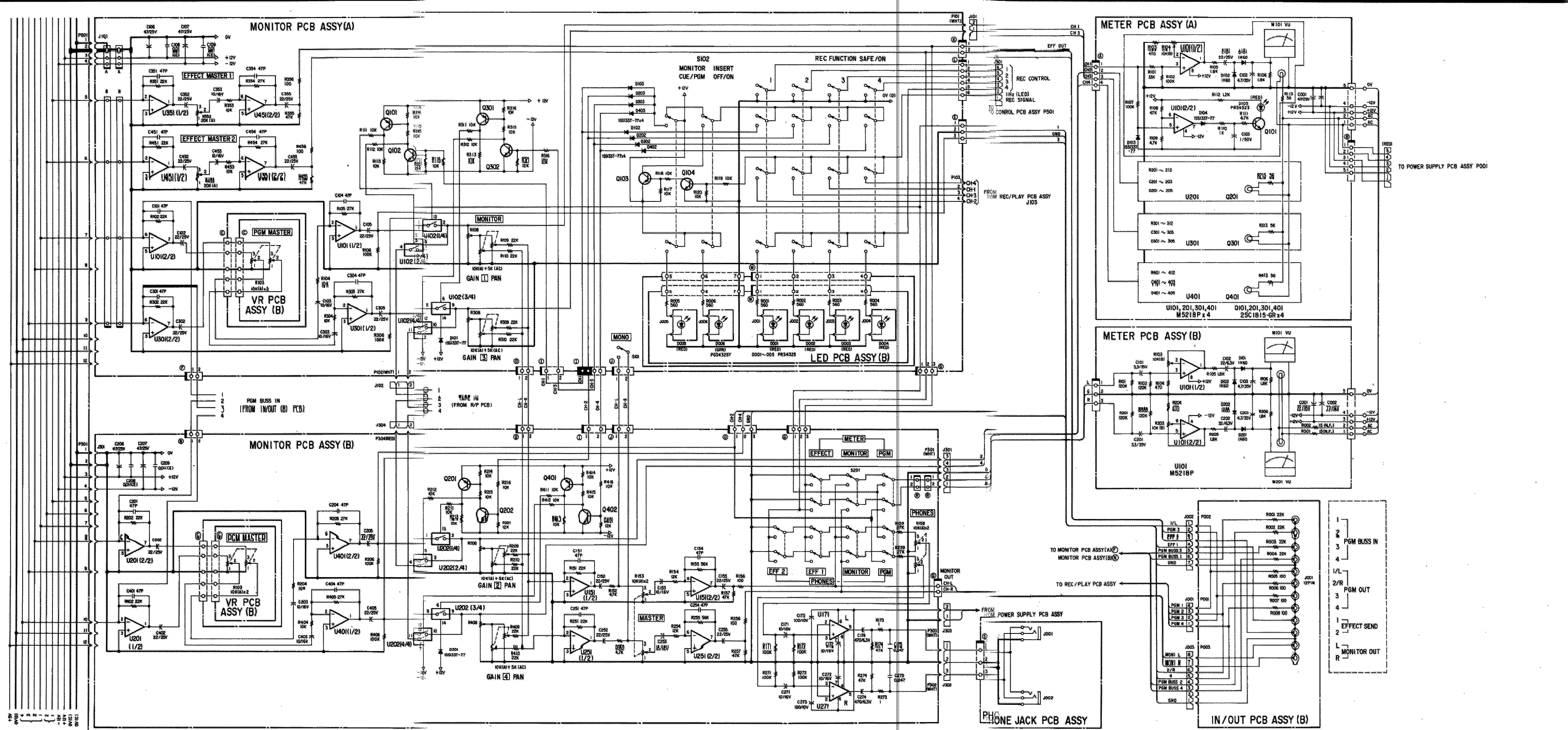
A

B

C

D

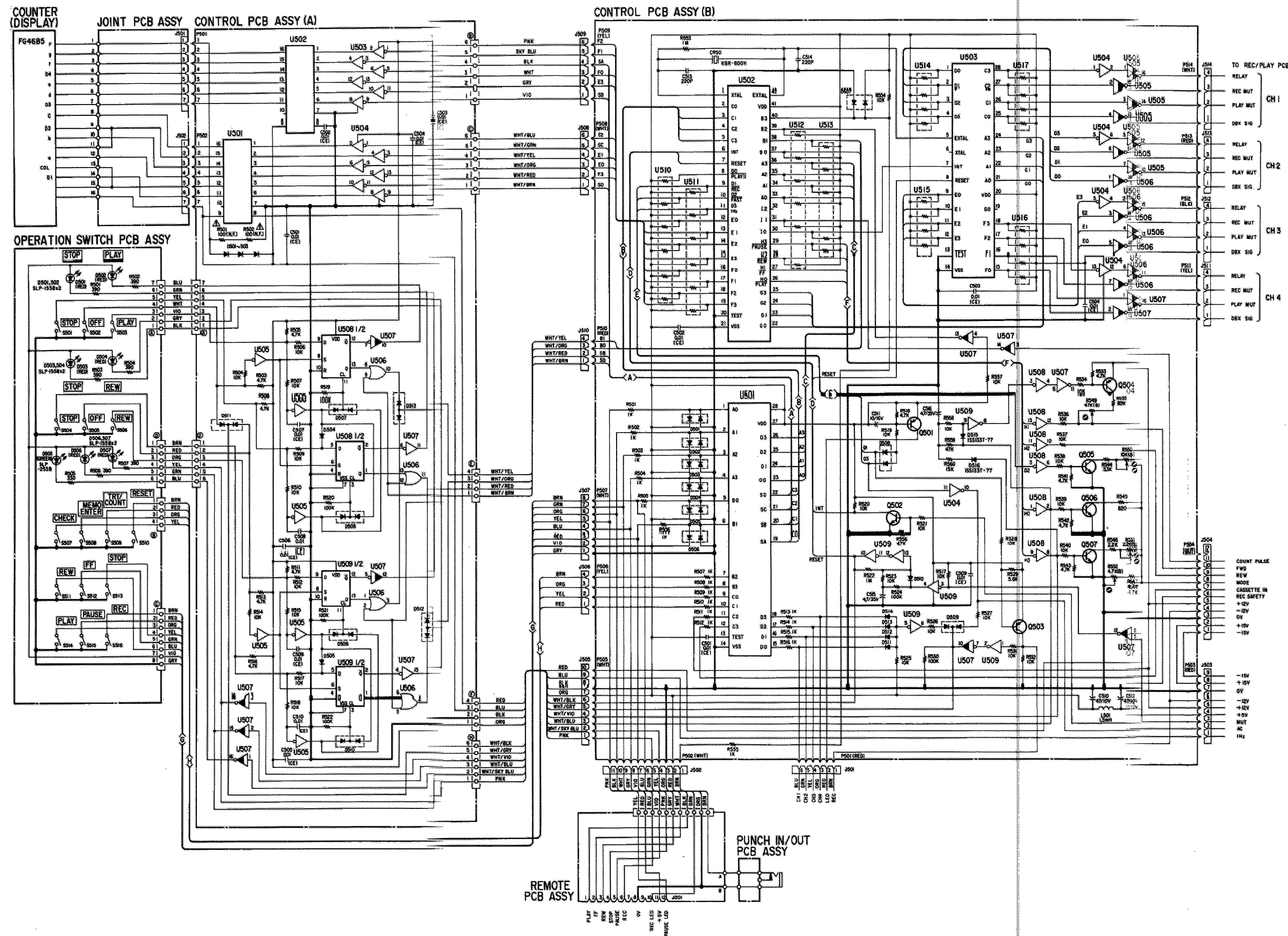
E



- | | | | |
|---------------|--|--|--|
| BUSS PCB ASSY | MONITOR PCB ASSY (A) U101, 301 - NJM4560D U102 - LC4066B U351, 451 - NJM4560D | MONITOR PCB ASSY (B) U201, 301, 401 - NJM4560D U202 - LC4066B U151, 251 - NJM4560D U171, 271 - NJM396D | Q201, 401 - 2SA1115-F Q202, 402 - 2SC1815GR |
|---------------|--|--|--|

- LED PCB ASSY (B)/PHONE JACK PCB ASSY/IN-OUT PCB ASSY (B) -
- METER PCB ASSY (A)/METER PCB ASSY (B)/MONITOR PCB (A) ASSY/MONITOR PCB (B) ASSY -

A
B
C
D
E

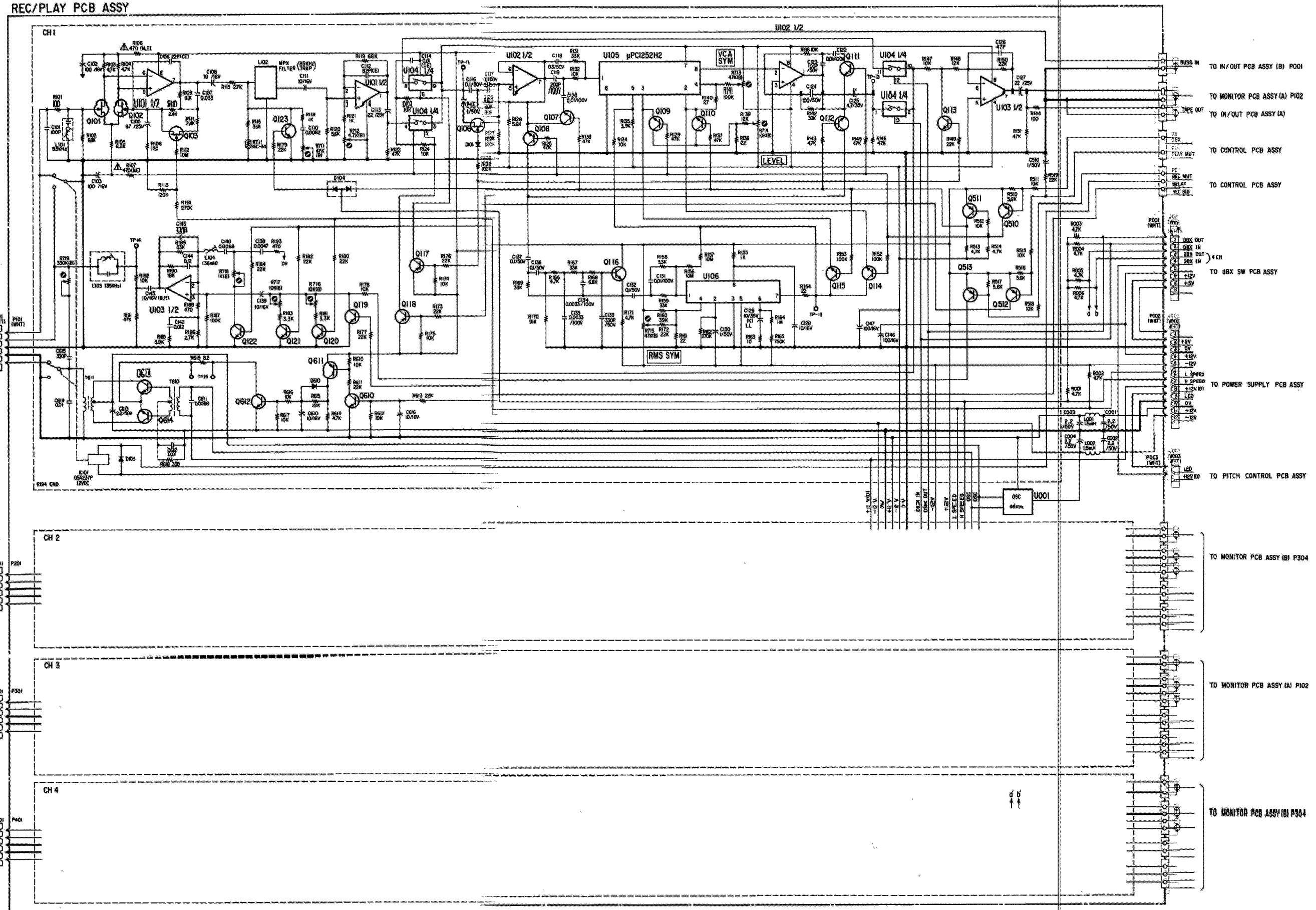


- CONTROL PCB ASSY (A)**
- U501, U502 - LB1294
 - U503-505 - HD14069BP
 - U506 - HD14071BP
 - U507 - M54517P
 - U508, U509 - HD14013BP
 - D501-505 - ISS133T-77
 - D507-511 - MC921
 - D512, 513 - MC911
- CONTROL PCB ASSY (B)**
- U501 - LC7800
 - U502 - LM6402G
 - U503 - LM648E
 - U504, U508 - HD14069BP
 - U509 - HD14069BP
 - U505-507 - M54517P
 - U510-513 - FRE-6P (10K4.6)
 - U514-517 - FRE-4P (10K4.4)
- Other Components:**
- Q501 - 2SA1115-F
 - Q502 - 2SC2603-F
 - Q503, 504 - 2SA1115-F
 - Q505-507 - 2SC2603-F
 - D501-507 - MC931
 - D508 - MC911
 - D509 - MC921
 - D510-516 - ISS133T-77

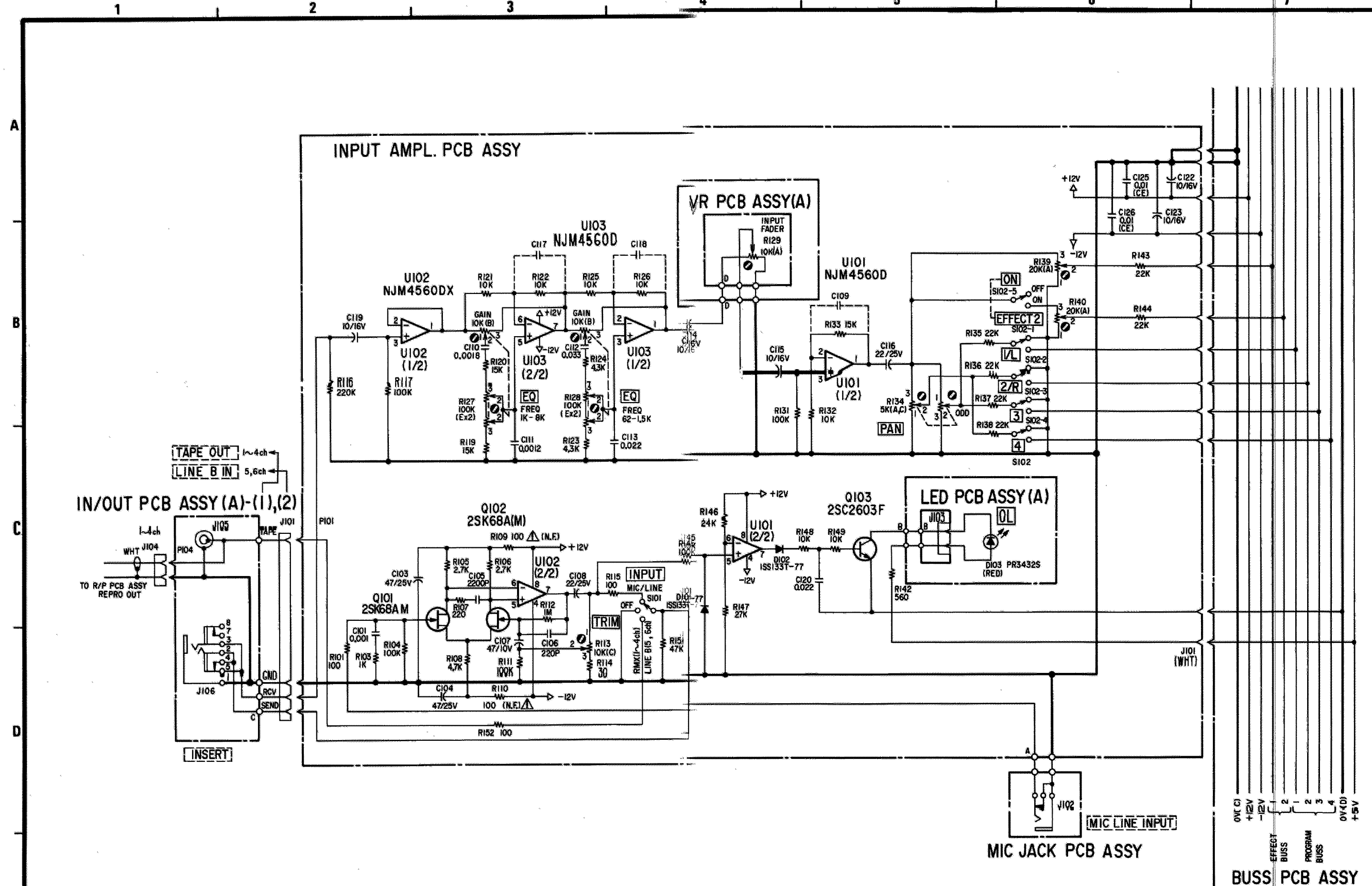
- JOINT PCB ASSY/CONTROL PCB ASSY (A) -
- CONTROL PCB ASSY (B)/OPERATION SWITCH PCB ASSY -
- REMOTE PCB ASSY/PUNCH IN/OUT PCB ASSY -

1 2 3 4 5 6 7 8 9 10

A
B
C
D
E



- | | |
|---|------------------------------------|
| UI01, 201, 301, 401 --- NJM4562D | Q107, 201, 301, 401 --- 2SK68AM |
| UI02, 202, 302, 402 --- NJM4560D | Q102, 202, 302, 402 --- 2SK69AM |
| UI03, 203, 303, 403 --- NJM4560D | Q103, 203, 303, 403 --- 2SK68AM |
| UI04, 204, 304, 404 --- LC4066B | Q104, 204, 304, 404 --- 2SC2603F |
| UI05, 205, 305, 405 --- μ PC1252-H2 | Q106, 206, 306, 406 --- 2SK364V |
| UI06, 206, 306, 406 --- μ PC1253-H2 | Q107, 207, 307, 407 --- 2SC2878(B) |
| | Q108, 208, 308, 408 --- 2SC2878(B) |
| Q109, 209, 309, 409 --- 2SC2878(B) | Q117, 217, 317, 417 --- 2SA1115-F |
| Q110, 210, 310, 410 --- 2SC2878(B) | Q118, 218, 318, 418 --- 2SA1115-F |
| Q111, 211, 311, 411 --- 2SC2878(B) | Q119, 219, 319, 419 --- 2SC2878(B) |
| Q112, 212, 312, 412 --- 2SC2878(B) | Q120, 220, 320, 420 --- 2SC2603-F |
| Q113, 213, 313, 413 --- 2SC2878(B) | Q121, 221, 321, 421 --- 2SC2603-F |
| Q114, 214, 314, 414 --- 2SC2878(B) | Q122, 222, 322, 422 --- 2SC2603-F |
| Q115, 215, 315, 415 --- 2SC2878(B) | Q123, 223, 323, 423 --- 2SC2878(B) |
| Q116, 216, 316, 416 --- 2SC2603-F | Q510, 520, 530, 540 --- 2SA1115-F |
| Q511, 521, 531, 541 --- 2SA1115-F | Q614, 624, 634, 644 --- 2SC945AKA |
| Q512, 522, 532, 542 --- 2SA1115-F | D101, 201, 301, 401 --- ISS133T-77 |
| Q513, 523, 533, 543 --- 2SA1115-F | D103, 203, 303, 403 --- ISS133T-77 |
| Q610, 620, 630, 640 --- 2SC2603-F | D104, 204, 304, 404 --- MC911 |
| Q611, 621, 631, 641 --- 2SA1115-F | D610, 620, 630, 640 --- ISS133T-77 |
| Q612, 622, 632, 642 --- 2SC1815 GR | |
| Q613, 623, 633, 643 --- 2SC945AKA | |



SCHEMATIC DIAGRAMS

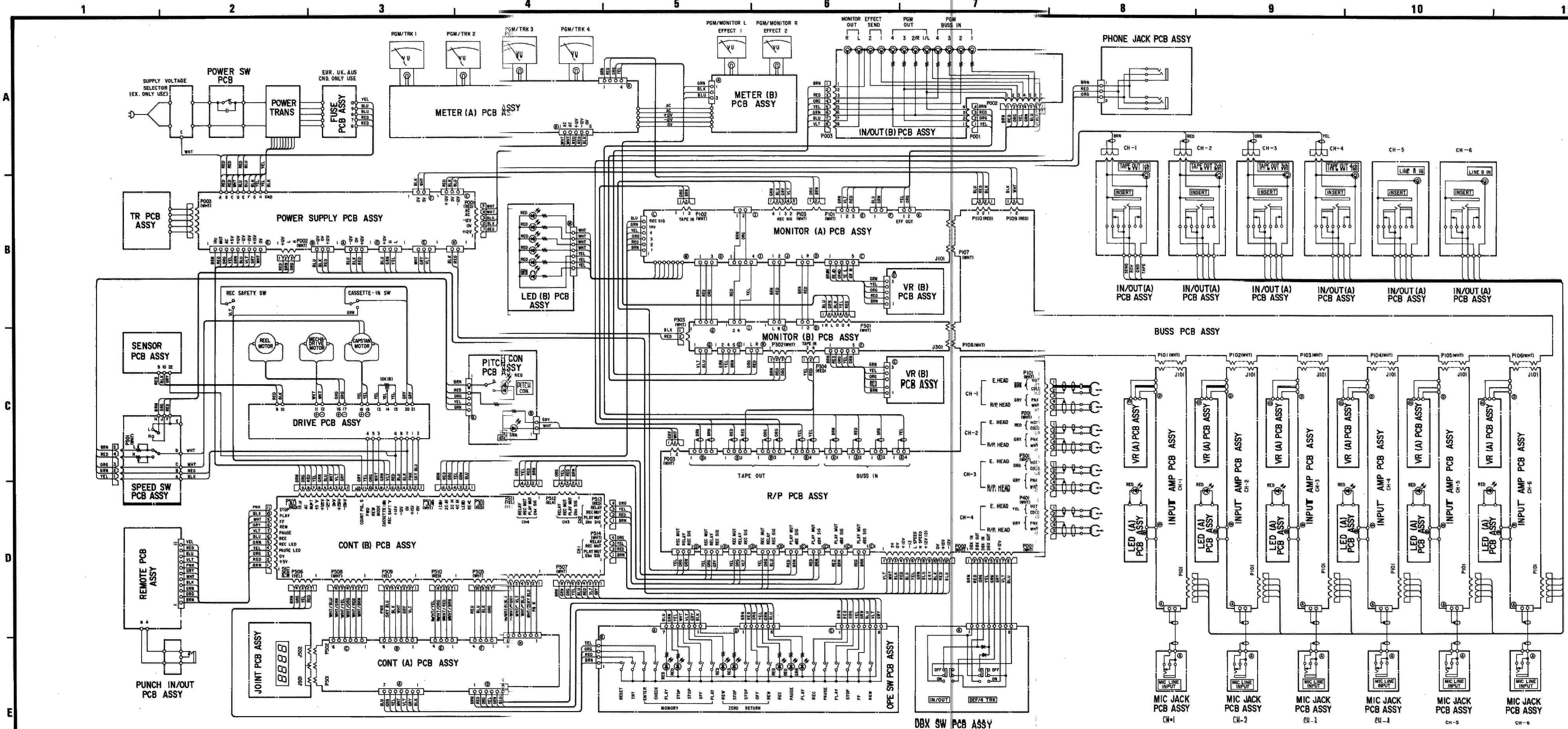
246

PORTASTUDIO

INSTRUCTIONS FOR SERVICE PERSONNEL
BEFORE RETURNING APPLIANCE TO THE CUSTOMER, MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT.

NOTES

1. Resistor values are in ohms (k = kilo-ohms, M = meg-ohms).
2. Capacitor values are in microfarads (p = picofarads).



PORTASTUDIO **246**

TASCAM
TEAC Professional Division

TEAC CORPORATION

MAIN OFFICE: 3-7-3 NAKACHO MUSASHINO TOKYO PHONE (0422) 53-1111
SALES OFFICE: 4-15-30 SHIMORENJAKU MITAKA TOKYO PHONE (0422) 45-7741

TEAC CORPORATION OF AMERICA

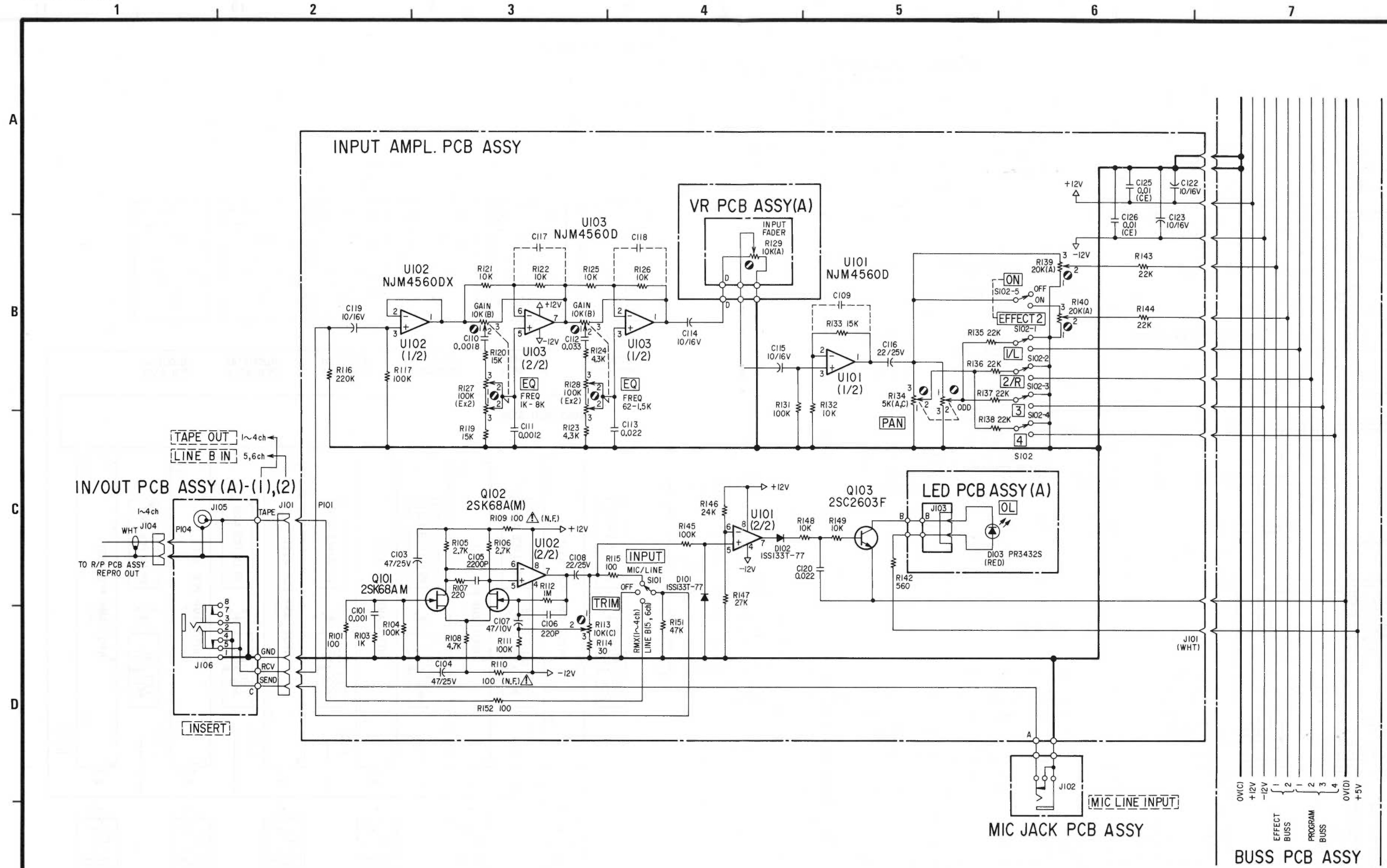
7733 TELEGRAPH ROAD MONTEBELLO CALIFORNIA 90640 PHONE (213) 726-0303

TEAC CANADA LTD.

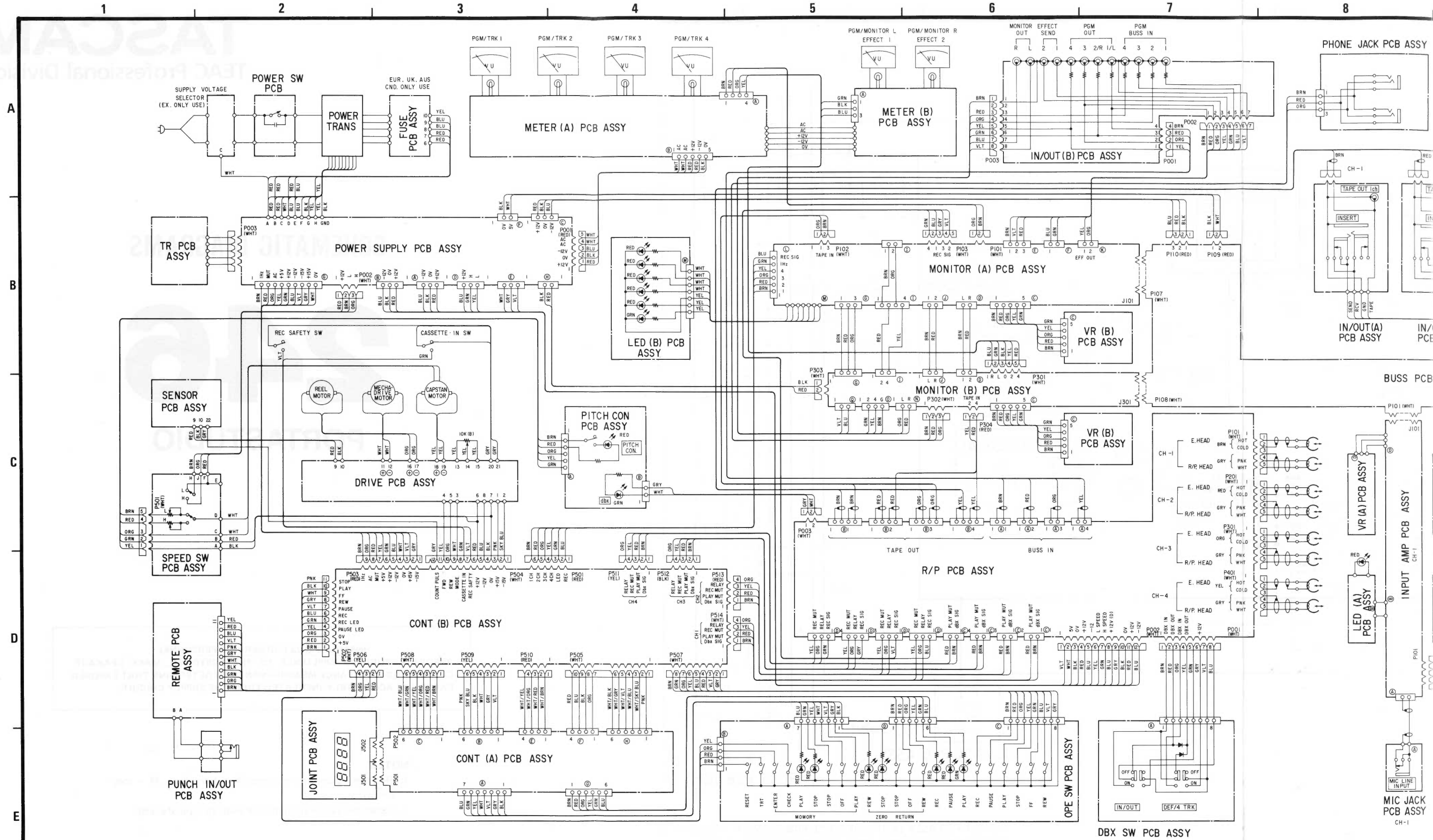
3610 NASHUA DRIVE UNIT 1 & 2 MISSISSAUGA ONTARIO L4V 1L2 PHONE 416-673-3303

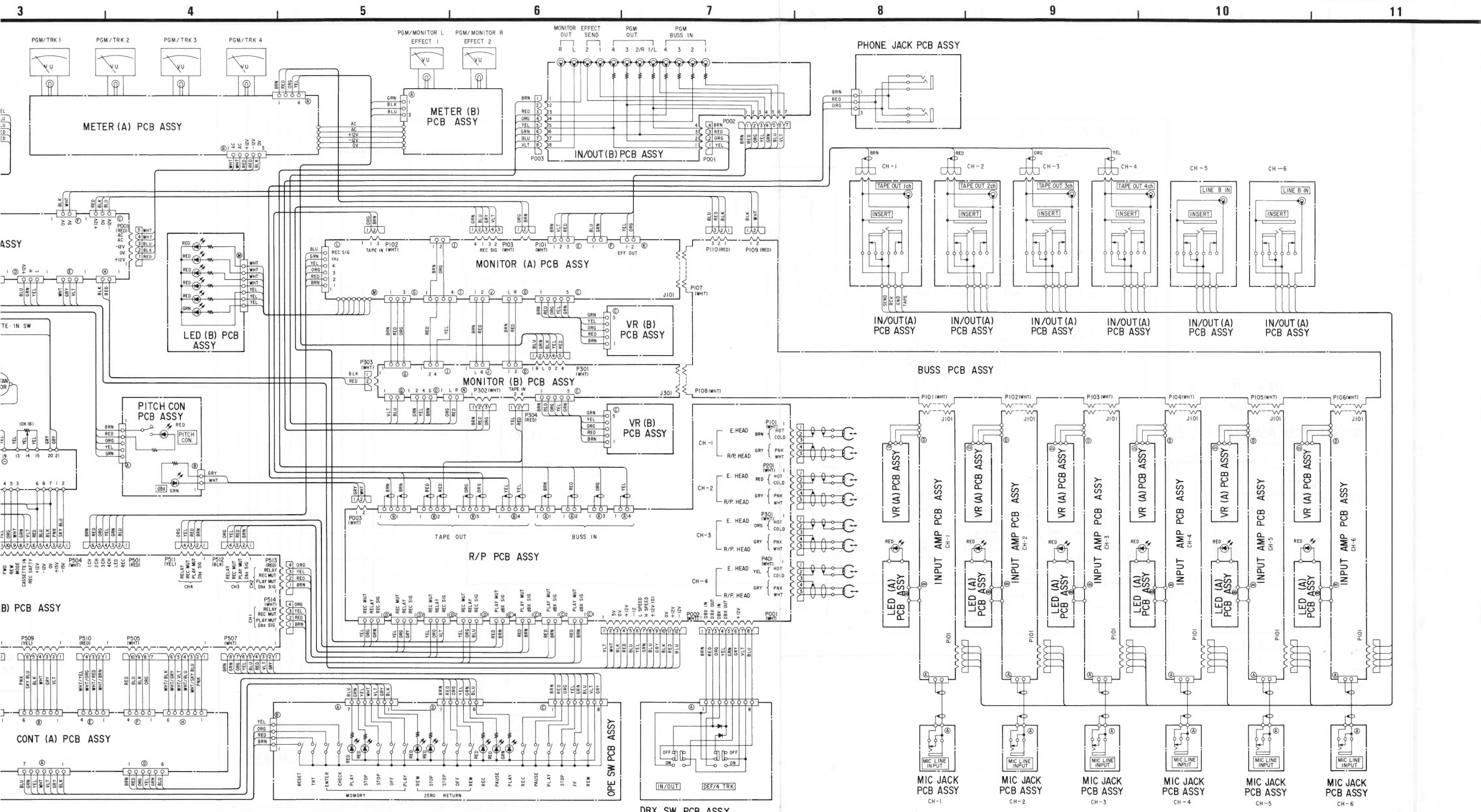
TEAC AUSTRALIA PTY., LTD.

115 WHITEMAN STREET SOUTH MELBOURNE VICTORIA 3205 PHONE 699-6000



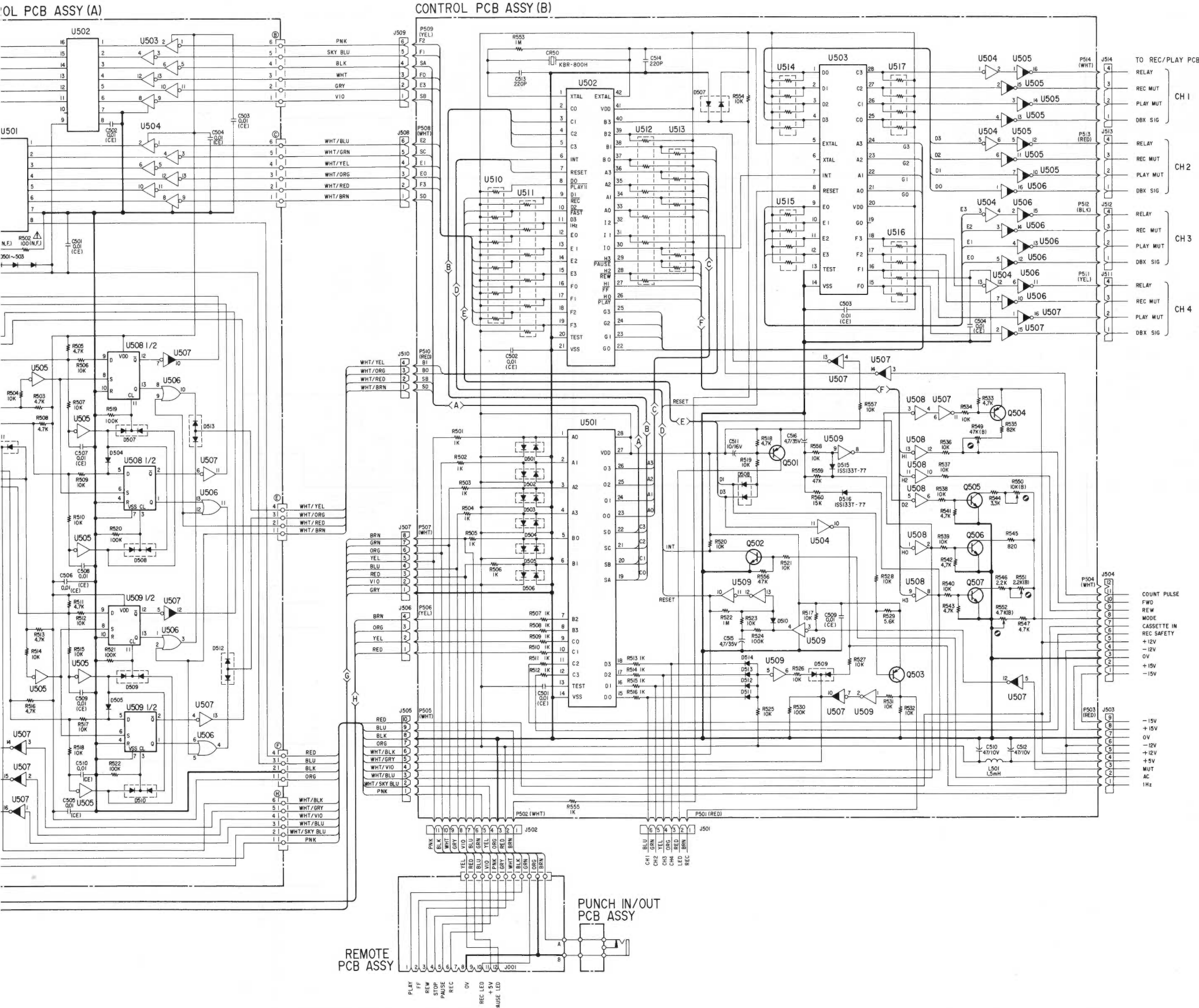
— IN/OUT PCB ASSY (A)/INPUT AMPL PCB ASSY/VR PCB ASSY (A) —
— LED PCB ASSY (A)/MIC JACK PCB ASSY/BUSS PCB ASSY —





- WIRING DIAGRAM -

TASCAM PORTASTUDIO
TEAC Professional Division



CONTROL PCB ASSY (A)
 U501,502--LB1294
 U503-505--HD14069UBP
 U506----HD14071BP
 U507----M54517P

CONTROL PCB ASSY (B)
 U501--LC7800
 U502--LM6402G
 U503--LM6416E
 U504,508--HD14069UBP
 U505--507--M54517P
 U510~513--FRE-6P
 U514~517--FRE-4P
 U508,509--HD14038P
 D501~505--ISS133T-77
 D507-511--MC921
 D512,513--MC911

Q501----2SA1115-F
 Q502----2SC2603-F
 Q503,504--2SA1115-F
 Q505-507--2SC2603-F
 D501~507--MC931
 D508----MC911
 D509----MC921
 D510~516--ISS133T-77

- JOINT PCB ASSY/CONTROL PCB ASSY (A) -
 - CONTROL PCB ASSY (B)/OPERATION SWITCH PCB ASSY -
 - REMOTE PCB ASSY/PUNCH IN/OUT PCB ASSY -

1 2 3 4 5 6 7 8

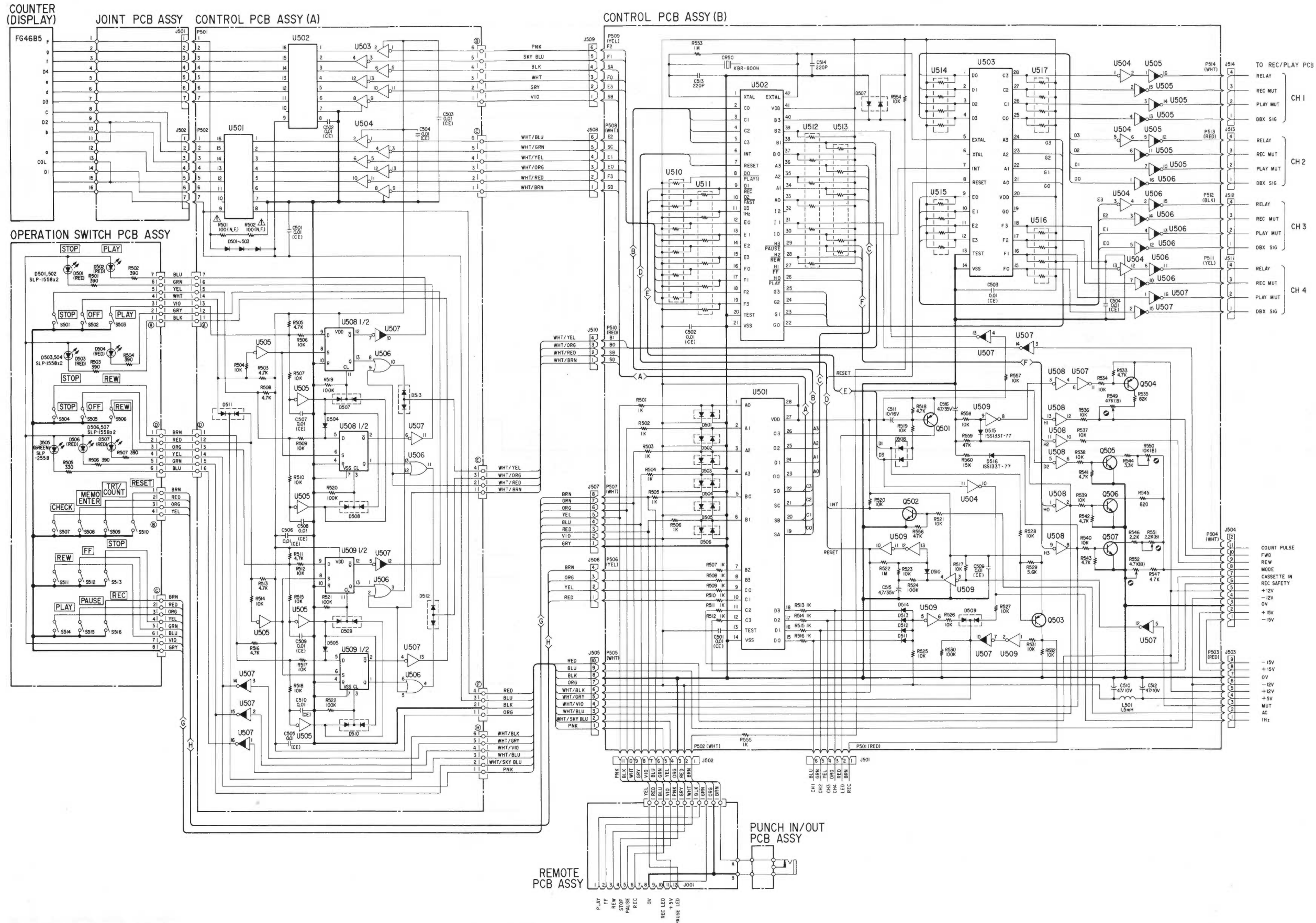
A

B

C

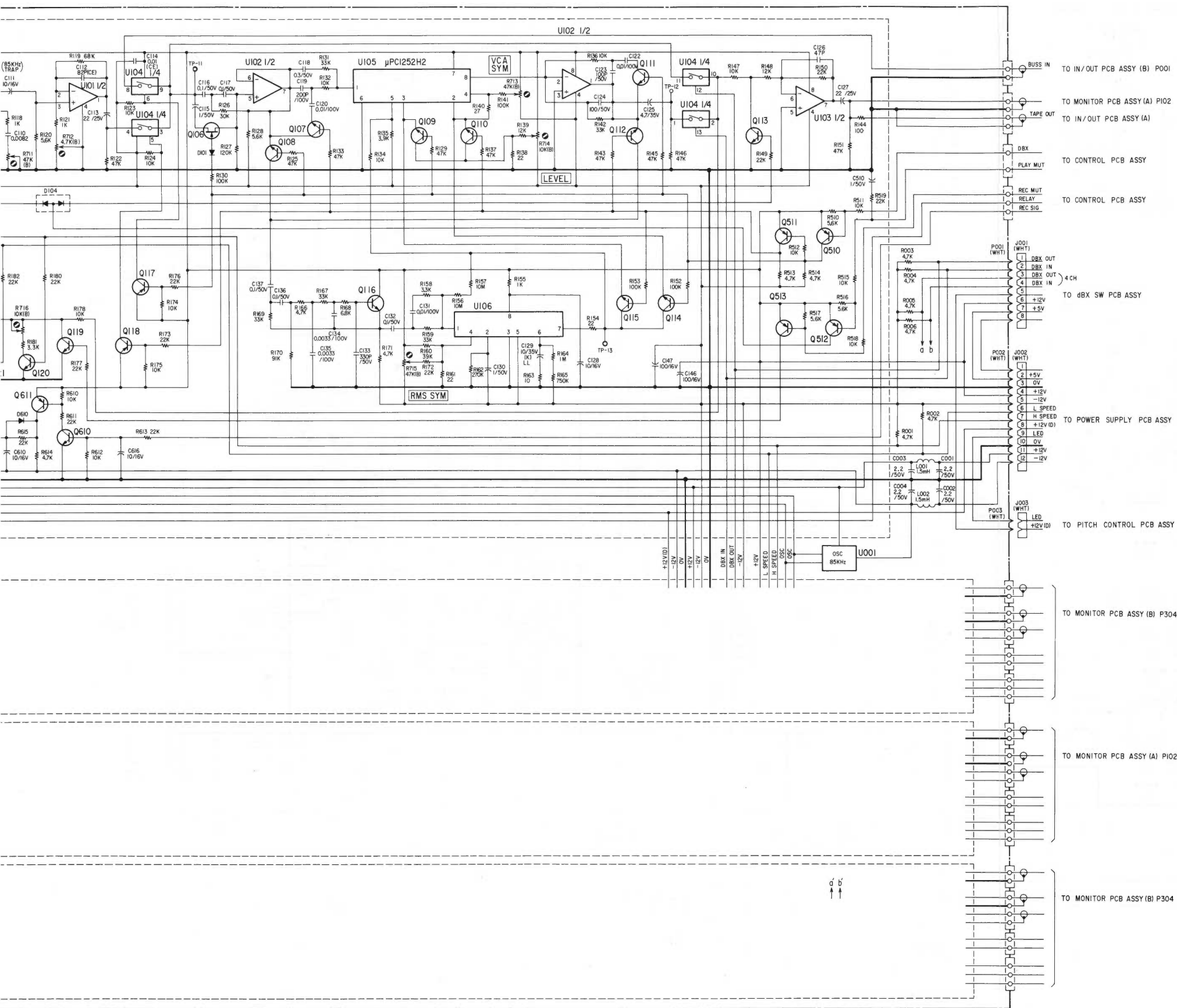
D

E



REVERSE SIDE OF SCHEMATIC DIAGRAM FOR PORTASTUDIO

3 4 5 6 7 8 9 10



- U101, 201, 301, 401---NJM4562DD
- U102, 202, 302, 402---NJM4560D
- U103, 203, 303, 403---NJM4560D
- U104, 204, 304, 404---LC4066B
- U105, 205, 305, 405---μPCI252-H2
- U106, 206, 306, 406---μPCI253-H2
- Q101, 201, 301, 401---2SK68AM
- Q102, 202, 302, 402---2SK68AM
- Q103, 203, 303, 403---2SK68AM
- Q104, 204, 304, 404---2SC2603F
- Q106, 206, 306, 406---2SK364V
- Q107, 207, 307, 407---2SC2878(B)
- Q108, 208, 308, 408---2SC2878(B)
- Q109, 209, 309, 409---2SC2878(B)
- Q110, 210, 310, 410---2SC2878(B)
- Q111, 211, 311, 411---2SC2878(B)
- Q112, 212, 312, 412---2SC2878(B)
- Q113, 213, 313, 413---2SC2878(B)
- Q114, 214, 314, 414---2SC2878(B)
- Q115, 215, 315, 415---2SC2878(B)
- Q116, 216, 316, 416---2SC2603-F
- Q117, 217, 317, 417---2SA1115-F
- Q118, 218, 318, 418---2SA1115-F
- Q119, 219, 319, 419---2SC2878(B)
- Q120, 220, 320, 420---2SC2603-F
- Q121, 221, 321, 421---2SC2603-F
- Q122, 222, 322, 422---2SC2603-F
- Q123, 223, 323, 423---2SC2878(B)
- Q510, 520, 530, 540---2SA1115-F
- Q511, 521, 531, 541---2SA1115-F
- Q512, 522, 532, 542---2SA1115-F
- Q513, 523, 533, 543---2SA1115-F
- Q610, 620, 630, 640---2SC2603-F
- Q611, 621, 631, 641---2SA1115-F
- Q612, 622, 632, 642---2SC1815 GR
- Q613, 623, 633, 643---2SC945AKA
- Q614, 624, 634, 644---2SC945AKA
- D101, 201, 301, 401---ISS133T-77
- D103, 203, 303, 403---ISS133T-77
- D104, 204, 304, 404---MC911
- D610, 620, 630, 640---ISS133T-77

1

2

3

4

5

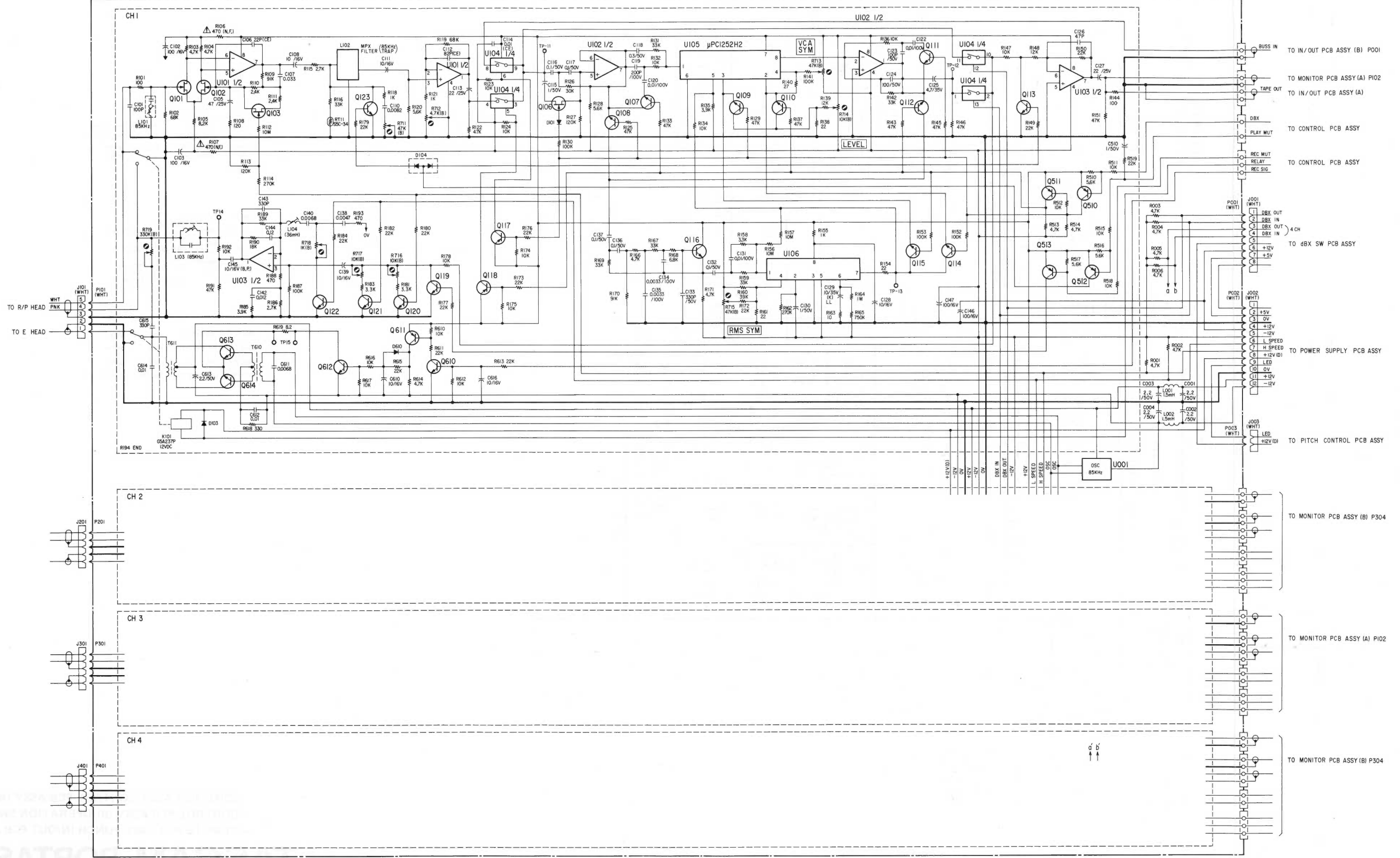
6

7

8

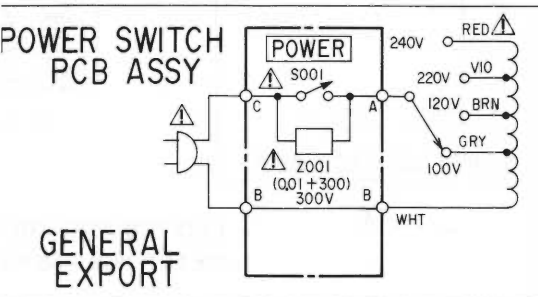
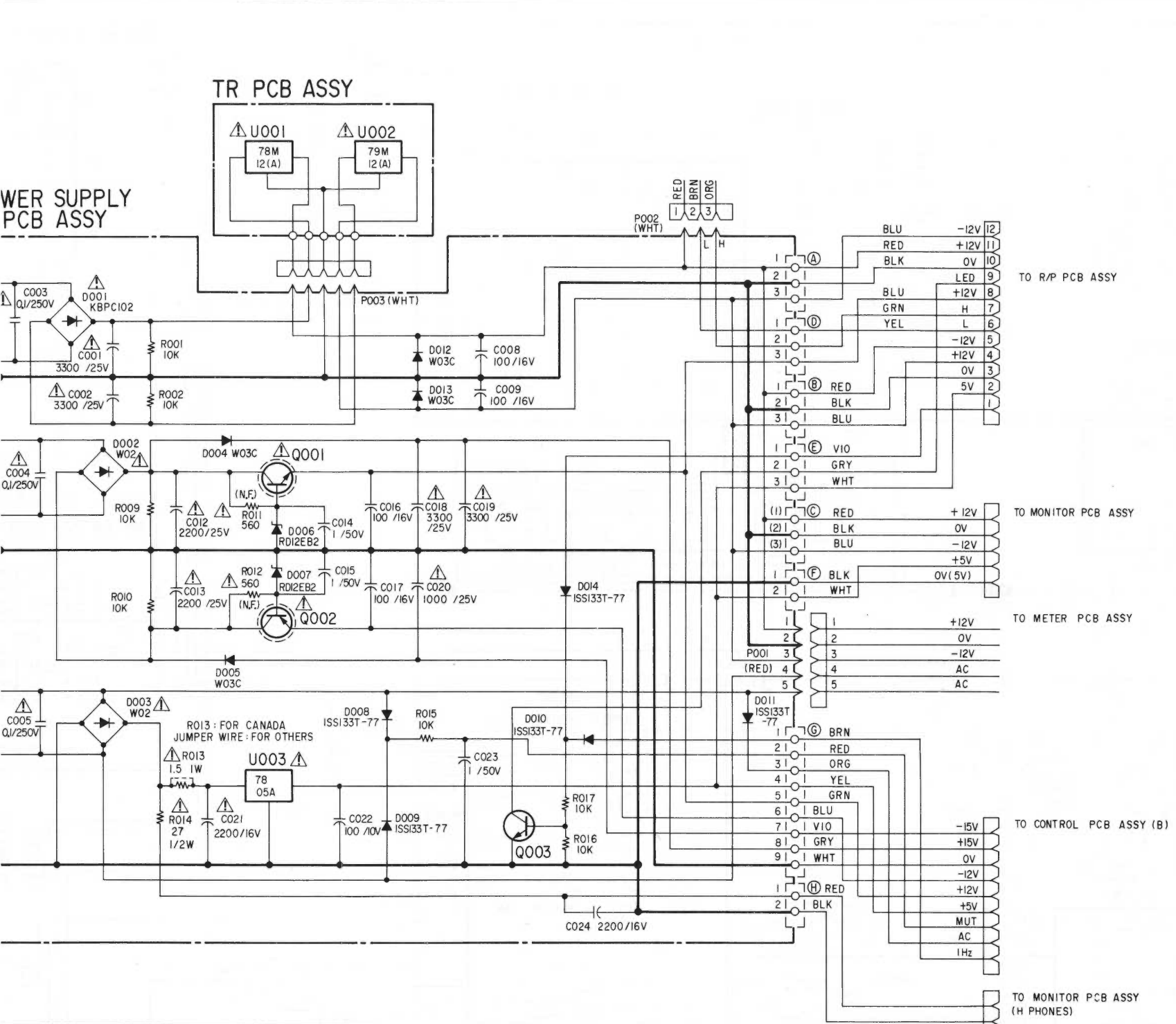
REC/PLAY PCB ASSY

A
B
C
D
E



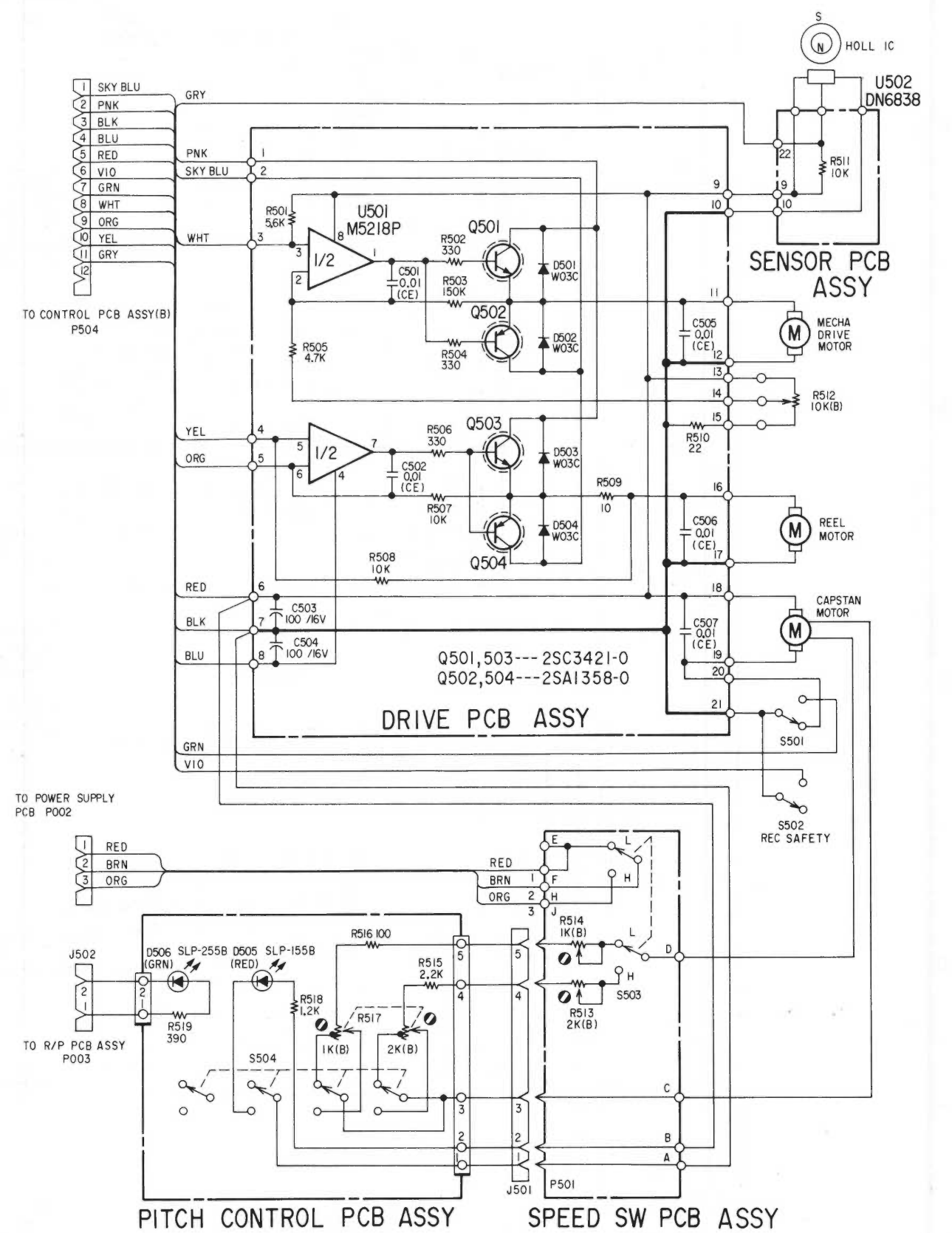
- TO IN/OUT PCB ASSY (B) P001
- TO MONITOR PCB ASSY (A) P102
- TO IN/OUT PCB ASSY (A)
- DBX
- TO CONTROL PCB ASSY
- PLAY MUT
- TO CONTROL PCB ASSY
- REC MUT
- RELAY
- REC SIG
- J001 (WHT)
- 1 DBX OUT
- 2 DBX IN
- 3 DBX OUT
- 4 DBX IN
- TO dBX SW PCB ASSY
- 5 +12V
- 6 +5V
- 7
- 8
- PC02 (WHT)
- J002 (WHT)
- 1 +5V
- 2 0V
- 3 +12V
- 4 -12V
- 5 L SPEED
- 6 H SPEED
- 7 +12V (DI)
- 8 LED
- 9 0V
- 10 +12V
- 11 +12V
- 12 -12V
- TO POWER SUPPLY PCB ASSY
- PC03 (WHT)
- J003 (WHT)
- LED
- +12V (DI)
- TO PITCH CONTROL PCB ASSY
- TO MONITOR PCB ASSY (B) P304
- TO MONITOR PCB ASSY (A) P102
- TO MONITOR PCB ASSY (B) P304

3 4 5 6 7 8 9 10

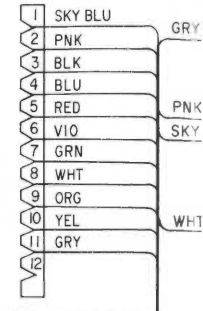
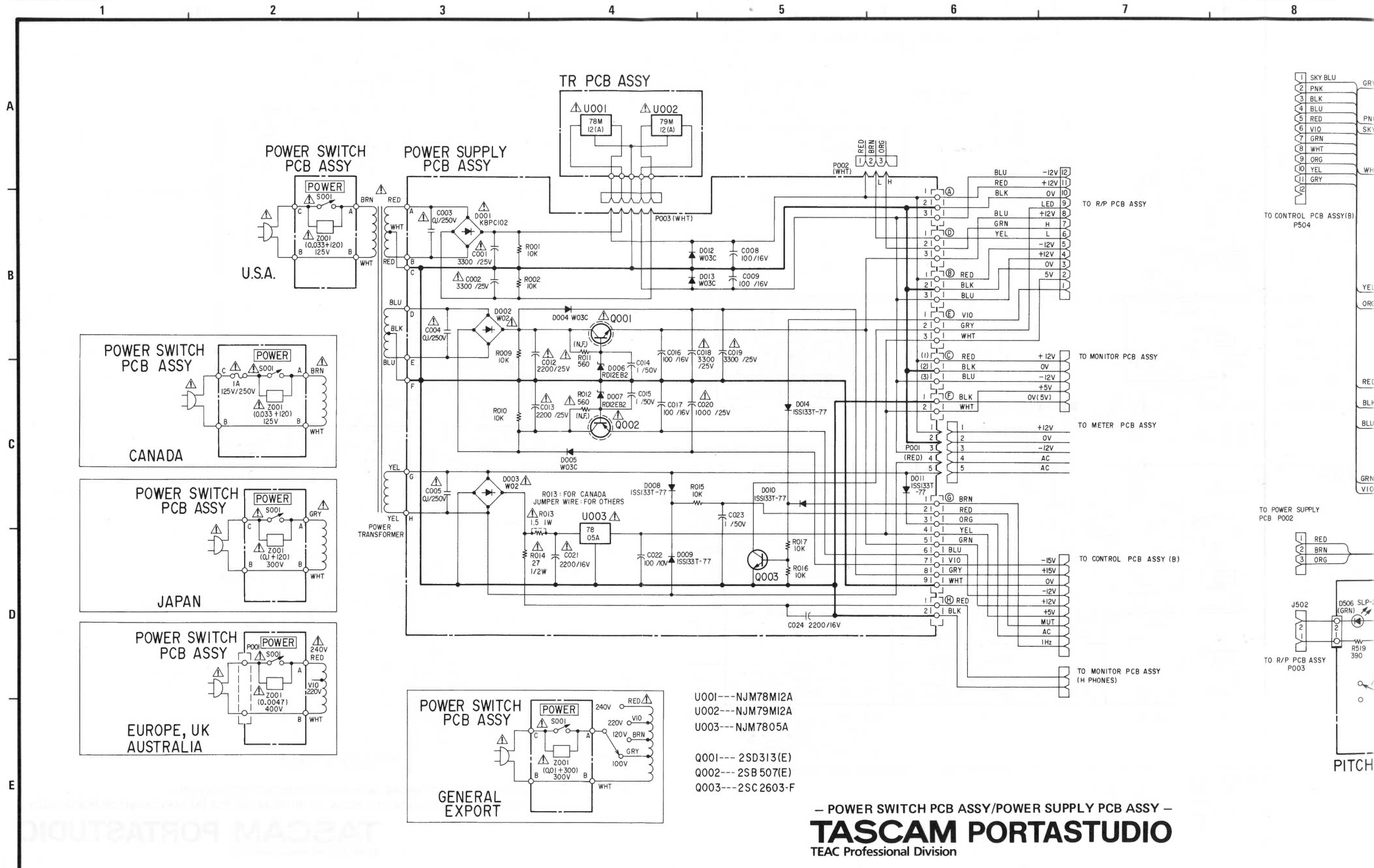


- U001---NJM78M12A
- U002---NJM79M12A
- U003---NJM7805A
- Q001---2SD313(E)
- Q002---2SB507(E)
- Q003---2SC2603-F

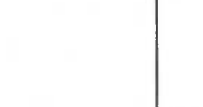
- POWER SWITCH PCB ASSY/POWER SUPPLY PCB ASSY -



- SPEED SWITCH PCB ASSY/PITCH CONTROL PCB ASSY -
- SENSOR PCB ASSY/DRIVE PCB ASSY -



TO CONTROL PCB ASSY(B)
P504



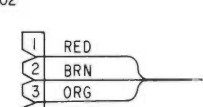
TO R/P PCB ASSY



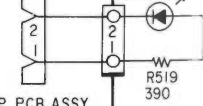
TO MONITOR PCB ASSY



TO METER PCB ASSY



TO POWER SUPPLY PCB P002



TO CONTROL PCB ASSY (B)



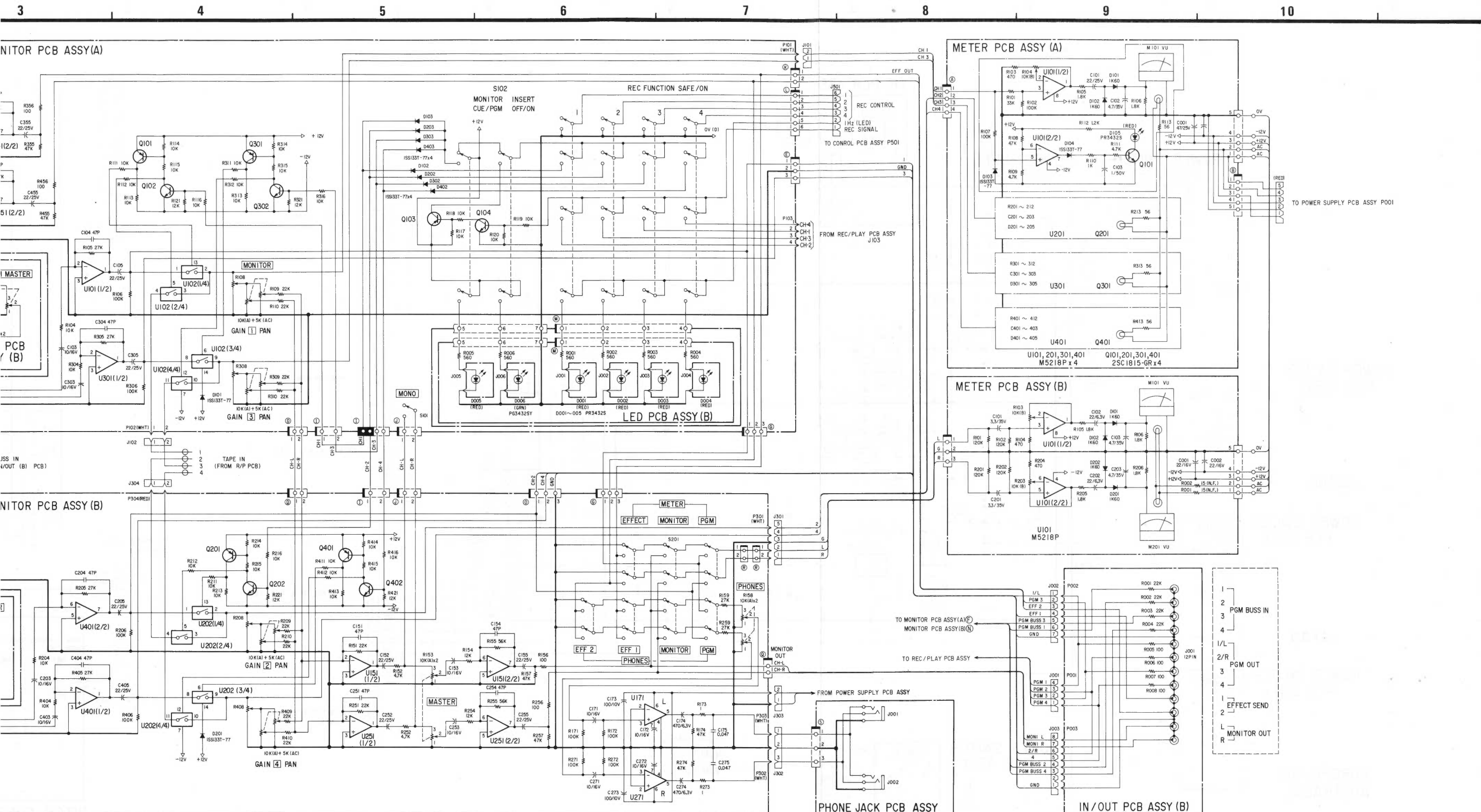
TO R/P PCB ASSY P003



PITCH

- U001---NJM78M12A
- U002---NJM79M12A
- U003---NJM7805A

- Q001---2SD313(E)
- Q002---2SB507(E)
- Q003---2SC2603-F

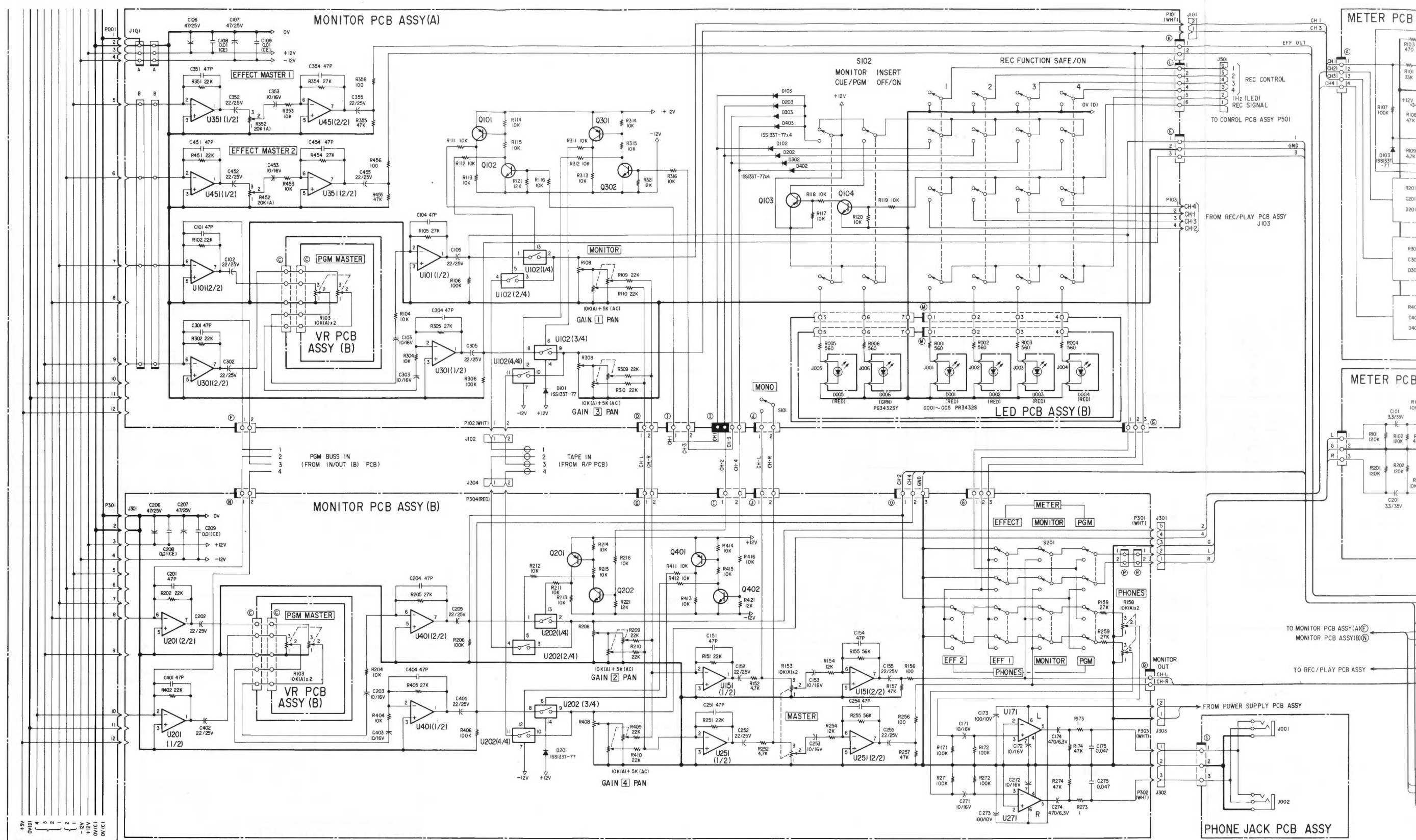


- Q101, 103, 201
301, 401 ---- 2SA1115-F
Q102, 104, 302 ---- 2SC1815GR
- MONITOR PCB ASSY (B)
U201, 401 ---- NJM4560D
U202 ---- LC4066B
Q202, 402 ---- 2SC1815GR
U151, 251 ---- NJM4560D
U171, 271 ---- NJM386D

- LED PCB ASSY (B)/PHONE JACK PCB ASSY/IN-OUT PCB ASSY (B) —
— METER PCB ASSY (A)/METER PCB ASSY (B)/MONITOR PCB (A) ASSY/MONITOR PCB (B) ASSY —

1 2 3 4 5 6 7 8

A
B
C
D
E



BUSS PCB ASSY

MONITOR PCB ASSY (A)
U101, 301---NJM4560D
U102 ---LC4066B
U351, 451---NJM4560D

MONITOR PCB ASSY (B)
Q101, 103, 201
301, 401---2SA1115-F
Q102, 104, 302---2SC1815GR
U201, 401---NJM4560D
U202 ---LC4066B
U151, 251---NUM4560D
U171, 271---NJM386D

— LED PCB ASSY
— METER PCB ASSY